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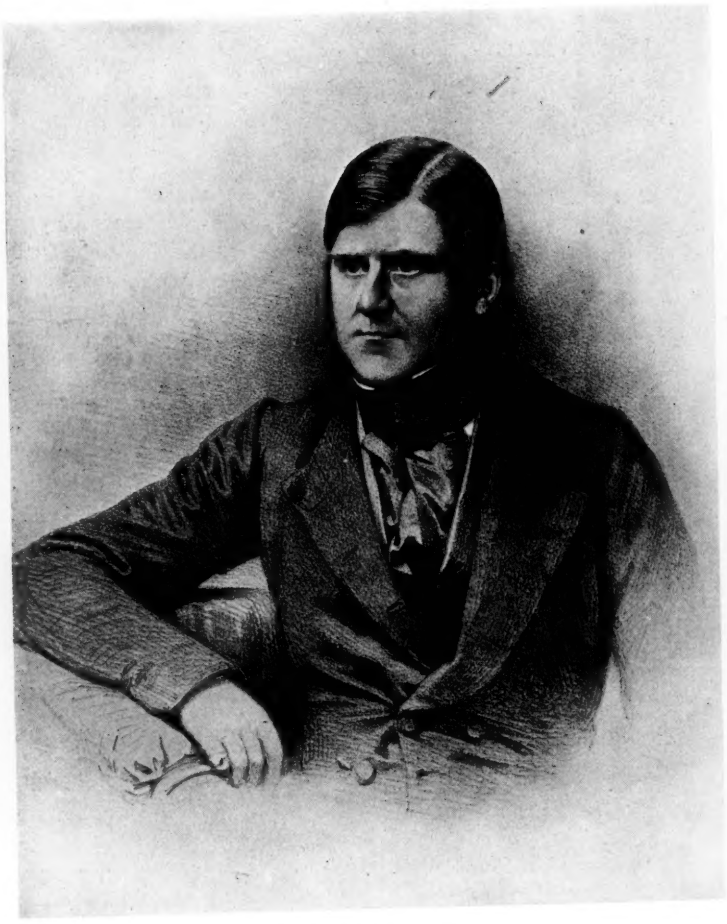


JOHN DALRYMPLE, F.R.S.

(1803-1852)

THE BRITISH JOURNAL

OF

OPHTHALMOLOGY

MAY, 1926

COMMUNICATIONS

BRITISH MASTERS OF OPHTHALMOLOGY SERIES

17.—JOHN DALRYMPLE, F.R.S., 1803-1852

BY

R. R. JAMES

LONDON

THE death of Dalrymple in the prime of life, after a lingering illness, must have been a great blow to the scientific side of ophthalmology of his day. Handicapped by sickness, he, in his short life, produced some work for which he should be remembered by ophthalmologists for all time; namely, the fine "Atlas of Diseases of the Eye," and his lesser known "Anatomy of the Eye." Such beautiful work performed during a strenuous life coupled with ill-health sets one wondering as to what he might have accomplished had he been spared to live to a green old age, and had he enjoyed good health.

In attempting a biography of Dalrymple, one is handicapped by the fact that it is more than 70 years since he died, and the obituary notices published at the time are nothing like so full as those of the present day. The same notice appeared in the *Lancet* and the *Medical Times* of 1852, both over the initials W.W.C. (certainly W. White Cooper). The notice is a true *nil nisi bonum* affair, but nothing emerges from it save the concrete facts that he lived in Grosvenor Street from 1839 to 1852, and that his death was due to renal disease. The obituary in the *Medical Directory* for 1853

is much ampler. From it we learn that he was the eldest son of William Dalrymple, surgeon of Norwich, and that he was educated by his father and at Edinburgh University. It is fairly certain that he would have been apprenticed to his father at an early age. He did not take, so far as I can discover, any medical degree at Edinburgh; his name does not figure on the lists of Edinburgh medical graduates, and there was no reason why he should have taken a medical degree; such was quite unnecessary for one who intended to practise as an eye surgeon in the early years of last century. It is of interest to note the fact that a James Dalrymple, *Scoto-Britannicus*, took his M.D.Edin. in 1731, with a thesis entitled "de tympania," and it may be permitted to wonder if this man was an ancestor.

William Dalrymple, the father, was surgeon to the Norfolk and Norwich Hospital. In 1840, appeared "Cursory Notes on the Morbid Eye," by Robert Hull, of Norwich; this work is dedicated to William Dalrymple, and from the dedication, rather a long-winded one, I extract the following. "With ophthalmic pathology your name has been long conjoined. More than twenty years have elapsed, since your ligature of the carotid artery finally established the practice, adopted by Mr. Travers, for orbital aneurysm by anastomosis."

"Your son, the assistant-surgeon of the Royal Infirmary in London, maintains the connection of the name of Dalrymple with ophthalmology. By his scientific work on the anatomy of the eye; by his practice as a surgeon, much consulted on its diseases; by the prospect of success, which awaits him in the scene of his unwearied studies. . . . Of the series of disciples, whom you have trained for the profession, not one but is proud of his instructor, not one but feels the value of your name for his own interest and prosperity.

"*Quid sciret ille. perpauci advertebant. UBI didicisset omnes quaerebant. Nihil ab HOC pravum et perversum produci posse arbitrabantur.* Such masters are daily becoming more rare. The money-maker; the trickster; the detractor have well-nigh supplanted those noble characters. All is pelf."

John Dalrymple took his M.R.C.S.Eng., in 1827, and settled in the City. In 1833, he was appointed Assistant Surgeon to the Royal London Ophthalmic Hospital, at that time known as the London Ophthalmic Infirmary. It would seem that the Committee were pleased at the idea of appointing one who had not been trained in London. He served on the junior staff for the rather long period of ten years and became full surgeon in 1843, retiring in 1849. In 1847, an additional assistant surgeon was appointed specially to assist him in his work, which he was finding too much for him. When he resigned in 1849, the question of appointing

another assistant surgeon arose. The staff appear to have objected to this, and in doing so referred to Dalrymple's long-continued illness, which prevented him attending regularly on Wednesdays and Saturdays. His absence was so regular that an assistant surgeon attended to do his work. Occasionally Dalrymple felt well enough to attend. When he did so there would be three members of the staff seeing patients instead of two, and the dispenser was not equal to the extra work, *e.g.*, a new assistant surgeon would only be in the way.

In spite of his retirement from the staff of Moorfields in 1847, I find that he was elected Consulting Surgeon to the North London Infirmary in this year; his duties in this latter post would have been far less arduous than the routine work of the out-patient department at Moorfields.

In 1850, Dalrymple was elected F.R.S. I have searched the indexes of the "Philosophical Transactions," and those of the "Proceedings of the Royal Society" from 1843 onwards, but only found one paper contributed to the Proceedings by him; viz., in 1849, entitled "A Description of an Infusory Animalcule allied to the Genus Notommata of Ehrenberg, hitherto undescribed." This paper was communicated by Thomas Bell, Esq., Secretary of the Royal Society. In 1851, he was elected a member of the Council of the Royal College of Surgeons of England; he having been one of the band of 400 elected original Fellows of the College.

The obituary in the *Medical Directory* draws attention to his work as a microscopist and alludes to the fact that he was one of the founders of the Royal College of Chymistry.

I must record my indebtedness to Mr. Percy Flemming for calling my attention to a paper by White Cooper in the *Lancet*, May 26, 1849, describing a case of "protrusion of the eyes, in connection with anaemia, palpitation and goitre"; in other words, a case of Graves's disease. The author alludes to Dalrymple's explanation of the exophthalmos in the following words. "An absence of the proper tonicity of the muscles by which the eyes are retained in their natural positions in the orbit; and some amount of venous congestion of the tissues forming the cushion behind the globes. Dalrymple relates a case of a gentleman whose eyes were so protruded that they were nearly denuded of the protection of the upper lid by a constant and powerful spasm of the levator palpebrae superioris, which drew the lids so far upwards and backwards, that much of the sclera above the cornea was visible."

Dalrymple's sign, often confounded with Stellwag's sign, of retraction of the upper lid, in Graves's disease is well known, but I venture to think that few of the younger members of the ophthalmic fraternity know that it was described by an Englishman in the first place. Mr. Flemming says "naturally Dalrymple

explains the retraction of the upper lid as due to spasm of the levator palpebrae, as Müller's muscle had not at that time been discovered (1884)."

Dalrymple's gouge is an instrument which may not be very well known under that title at the present time. It is a grooved spud, and those who have worked in the clinic of Mr. William Lang at Moorfields will remember how fond he was of declaring that this grooved spud was the handiest implement imaginable for carbolizing a corneal ulcer.

The Anatomy of the Eye

This was Dalrymple's first noteworthy publication. It appeared in 1834, when he was Assistant Surgeon to the London Ophthalmic Infirmary (R.L.O.H.). It was dedicated "to J. R. FARRE, M.D., Physician, and to Frederick Tyrrell and John Scott, Esqrs., Surgeons, to the London Ophthalmic Infirmary, this work on the 'Anatomy of the Human Eye,' over the manifold disorders of which they exhibit so many proofs of consummate mastery and skill, is dedicated by their sincere friend, John Dalrymple."

The preface is dated March, 1834, from 8, New Broad Street. The book is divided into four sections and forms a happy blend of extracts from the classical authors with his own observations from dissections, together with some illustrations (verbal) of clinical interest. Section 1 deals with the various investments of the eyeball, *i.e.*, sclera, cornea, choroid, iris, ciliary body, and retina. Section 2 contains the humours of the eye and includes the lens. Section 3 deals with the accessories of the organ of vision, the orbits and their contents, the ocular muscles, arteries, veins, nerves, lymphatics, and the orbital fat. Section 4 includes the defences of the eyeball, the brows, occipito-frontalis, and corrugator-supercilii muscles, the lids, caruncle, conjunctiva, lacrymal apparatus, and ends with a description of the pecularities exhibited by the human eye at different epochs of life. The whole ends with a note of correction drawn from a dissection performed while the work was in the press, and five plates of drawings of dissected eyeballs, lids, etc. These drawings were made by Dalrymple himself and were engraved on stone by W. H. Kearney, who also engraved the illustrations for Tyrrell's "Diseases of the Eye." The illustrations of each of these works are worthy of study; they are beautiful pieces of work.

An extract of clinical interest may be allowed in this place. "At the London Ophthalmic Infirmary during the years 1827-28, I had occasion to observe two or three cases of palsy of the iris (to be distinguished, however, from tremulous iris, which has frequently been so named), in each of which, the circular muscle

was alone affected. The radiating fibres contracted to within two-thirds of their natural length; a space nearly equal to that allowed for muscular contraction. As a consequence of the enlarged size of the pupil, a confused sense of dazzling ensued, the retina retaining its natural sensibility. In twilight, or during a dull day, the patients' perceptiveness of objects was reasonably distinct. Under the influence of a gradual, but full course of mercury, all these cases perfectly recovered, the pupil ultimately recovering its primitive size and mobility." My own copy of this work is a prize presented at St. George's Hospital for the session 1836-37, to Edmund Young. It contains the hospital coat-of-arms on the cover.

The Pathology of the Human Eye

Dalrymple's great atlas came out in 1852, the year of his death. It was dedicated to Sir James Clark, Bart., Physician to the Queen. The plan of the work was "to exhibit diseases of the eye as they occur in nature, in a series of drawings, with such explanations as shall identify them with symptoms and with the general treatment of the case. An extensive collection of drawings by the best artists has been made, under the superintendence of the late Mr. John Scott, and of the author, from cases seen at the Royal Ophthalmic Hospital in Moorfields. It is due to the memory of a late dear colleague, Mr. John Scott, who was removed from us in the vigour of his manhood by a premature death, to say that the plan of this work had been conceived by him, and preparations contemplated to give his collection of drawings to the public, in somewhat of a similar form; but time was not permitted to him, and he bequeathed to the author his valuable series of drawings, which, united to those collected by the latter during many years, have furnished a large stock, whence the present plates have been selected. The original water-colour drawings have been principally made by Mr. W. H. Kearney and by Mr. Leonard." The engraver was Mr. W. Bagg.

The atlas consists of 36 plates, each of which in the large majority of instances contains six illustrations of diseased eyes, with pages of printed matter giving short descriptions of the conditions illustrated. A few full-page illustrations are included. It is difficult for those who are not acquainted with the work in question to get an idea of the merit and real artistic beauty of these pictures. It will be sufficient to state that besides being works of art, the pictures are faithful to nature.

I note in the first edition of Dixon's "Diseases of the Eye," 1855, a rather sarcastic allusion in a footnote to the bright pea-green appearance of the pupil in glaucoma recorded in this atlas. In my own copy, whether from age or much handling, the "true sea-

green, or glaucous hue" has toned down to a colour that would not have evoked Mr. Dixon's rather contemptuous allusion, had he been alive to-day and able to correct his former impression.

The atlas concludes with a word of apology. The therapeutical part of the book has been necessarily curtailed as much as possible, and for practical purposes those methods of treatment only which the author has found serviceable have been mentioned.

"If the writer has unintentionally misrepresented the opinions of any author, he will be deeply sorry, and that he has done so in one instance at least, viz., as to the thickness of the apex of the conical cornea, he is ready to admit. To Mr. White Cooper, he feels it is due to make this *amende*, and it will best repair the error to refer his readers to an excellent monograph on the subject, lately published by Mr. Cooper. In the explanation to Plate 19, the author has also been in error in attributing the practice of administering turpentine in iritis to *the late Mr. Carmichael*, of Dublin, instead of the present very intelligent Mr. Hugh Carmichael, of the same place."

Dalrymple's continuous ill-health and early retirement led to the rapid rise of Sir William Bowman in the fields of practical ophthalmology.

Dalrymple died early in May, 1852. Some additional information emerges from an inspection of his will (1852, Vol II, folio 391). His will was made on August 15, 1851; he records his wish to be buried "in the catacombs of Highgate Cemetery, in the compartment already paid for, next to where my late father is buried." But if he dies "more than thirty miles from London, then he desires to be buried in whatever parish he may die in; the funeral to be as simple as possible, and not to cost more than £40 in any event."

"To Thos. Spencer Howard of 56, Grosvenor Square, the £100 he owes me." By a codicil, he leaves the same person various ophthalmic instruments in token of regard. No such name can be found in the Medical Directories of the time, nor does this man appear in the first issue of the *Medical Register* in 1859; so it is practically certain that he was not a medical man.

After recounting various shares in English railways, and in the Norwich Waterworks, he mentions a mortgage of William Bircham of Reepham in Norfolk; and goes on to deal with "a portrait of Dr. Wm. Hunter, said to be by Sir J. Reynolds," about which one would like to know more at the present time; "Silver salver presented to my late father; ditto presented to self by Mr. Stuart of Kelso; and gold watch by Gow."

The following relations are mentioned: brothers; Arthur, Archibald, and Donald; brother (?brother-in-law) Wallace Waters; sister, Kate Bircham; other sisters not named; mother-in-law not

named; and the Jannings family of Norwich, the Miss Jannings, "my relations." "To the Royal Ophthalmic Hospital my drawings of diseases of the eye for the use of the students."

The executors were his brother, Robert ffarre Dalrymple, of 2, Southwick Crescent, Hyde Park, and his brother-in-law, Thomas Bircham. The will was sworn to May 12, 1852; and probate was granted in London, May 15, 1852. The amount at which the estate was sworn is not mentioned.

His brothers Archibald and Donald were in practice in Norwich. Archibald was Assistant Surgeon to the Norfolk and Norwich Hospital; he died before 1858. Donald was alive then; he was Surgeon-Accoucheur to the Norfolk Lying-in Charity, and Proprietor of and Surgeon to Heigham Retreat.

Those beautiful paintings of diseases of the eye are still preserved in the library of the Royal London Ophthalmic Hospital.

In conclusion I must express my best thanks to Mr. Percy Flemming, who has placed his unrivalled knowledge of the history of Moorfields Hospital and its honorary staff at my disposal, in a series of extracts from his notes taken from the minutes of the meetings of the Managing Committee.

The frontispiece is reproduced from a lithograph which hangs in the Bowman Library, kindly photographed for me by Miss Blake. For leave to have this photo taken I owe a debt of gratitude to Mr. W. G. Spencer, Hon. Librarian of the Royal Society of Medicine.

TRACHOMA IN PALESTINE. ITS EPIDEMIOLOGY AND A REVIEW OF MEASURES FOR DEALING WITH IT

BY

N. SHIMKIN, M.D., PH.D.

CHIEF OPHTHALMOLOGIST OF HADASSAH MEDICAL ORGANIZATION, HAIFA, PALESTINE

Review of Literature

THE first information that came under my notice from a European source was the report published in 1896 by the Petrograd oculist, Dr. Th. German[1], who had been sent by the Russo-Palestine Society on a special mission to Syria and Palestine in order to examine the state of eyes of the school children under the care of the Mission, and to adopt measures against the eye diseases.

One thousand and ninety-six Arab children were examined by Dr. German in Palestine. Thirty-eight per cent. of the children

of the town schools and 64 per cent. of the children of the village schools were infected with trachoma. From this statement it will be seen that the Arab village schools had nearly double the number of cases of trachoma found in the town schools, and that on an average there were 51 per cent. of cases of trachoma in the Arab schools. Not without interest is his statement that of the 103 children examined by him in the German colony of Haifa there was not a single child infected with that disease. He also examined 1,228 grown up patients, viz.: 540 at Jerusalem, 367 at Bet-Lachem, and 321 in Nazareth, and of all those examined only 37 had no sign whatever of trachoma. Although the number of patients who came to the doctor for help on account of their disease does not entitle us to come to any conclusion, there is reason to believe that trachoma was widespread in the Palestinian towns to 1896, and, taking into account the above figures with regard to school children, the incidence probably was much higher in the villages.

I have found other valuable information about the distribution of trachoma in Palestine in the reports concerning the Hebrew schools which were published for the period 1913-15.

Dr. Krinkin[2], the Jaffa oculist, gives some interesting data in his work published in 1913 (Hebrew) "Trachoma in the Hebrew Schools of Palestine, and How to Fight Against it." Two thousand three hundred and twenty-two school children were examined by him in Jaffa, Haifa, and several Jewish colonies of Judea, and among them he found 426 cases of trachoma, *i.e.*, 18.5 per cent. Of 110 children examined in the Jaffa kindergartens, 44 children (40 per cent.) were infected with trachoma; in the Haifa kindergartens 26 children out of 72 (36 per cent.) suffered from that disease. In the kindergartens of the Jewish colonies of Judea, such as Rehoboth and Rishon Lezion, 34-35 per cent. were infected with trachoma. The proportion of the children infected with trachoma in the elementary schools of Judea varies between 13 per cent. in Petach-Tikva and 46.6 per cent. in Rehoboth. In one of the colonies in Beer Jacob, 11 children out of 12—amounting to 92 per cent.—were infected. In the Jaffa Elementary School for girls there were 42 trachoma cases among 386 children (10.9 per cent.) whereas there were only four trachoma cases among the 350 children of the Jaffa Gymnasium, *i.e.*, 1 per cent.

On the strength of the above facts it is evident that the percentage of trachoma in the kindergartens of the town and also of the country fluctuates between 34 per cent. and 40 per cent., whereas in the elementary schools the proportion of the trachoma cases is much higher in the country than in the town (Jaffa).

Dr. E. Auerbach[3], who had had the children of the Haifa kindergartens under his observation in the course of several years,

found 212 trachoma cases among 555 children, *i.e.*, 38.2 per cent., and out of 250 children under the age of six the following incidence of infection was found:

Age.	Number of infected.	Per cent.
1	59	23.6
2	116	46.4
3	42	16.3
4	18	7.2
5	12	4.8
6	3	1.2

On the above facts he came to the conclusion that two-thirds at least of all the children affected with that disease were being infected in their early childhood.

Dr. Feigenbaum[4] having examined 1,500 children and adults states that among the children under the age of three there were 26.8 per cent. of trachoma, among the children between eight to fourteen=28 per cent., fifteen to twenty=33.9 per cent. He also came to the conclusion "that most cases are infected very early; under the age of three."

The most comprehensive statistical material regarding the distribution of trachoma in Palestine is found in the report of the first trachoma meeting of the Jewish physicians of Palestine held in April, 1914[5]. At this meeting a paper was read by Dr. Ticho in which he reported on his observations made in Jerusalem. Out of the 4,313 children examined by him in the Jerusalem schools 1,206 were infected with trachoma, *i.e.*, 27.96 per cent. the rate fluctuating in various schools between 15.5 per cent. and 81.6 per cent. (Persian Talmud-Tora). Another paper was read by Dr. Feigenbaum in which he reported on 2,124 children examined by him in the Jerusalem schools and other institutions, where he found 533 trachoma cases=26.46 per cent.; and it should be noted that this number comprised 713 children from Arab schools, 189 of which (26.5 per cent.) suffered from trachoma. Out of 553 cases there were 484 cases of active and 69 of cured trachoma. In his report Dr. Feigenbaum also gave the results of his investigations in the colonies of Judea, where he examined 1,128 persons (children and adults), 276 of whom suffered from active trachoma and 36 from cured trachoma; the total amount of trachoma cases being 312 (27.66 per cent.). Of the schools examined by him, the lowest rate of trachoma (4.5 per cent.) was found in the Hebrew Gymnasium in Jerusalem and the highest percentage in the Persian Talmud-Tora "B" (44 per cent.).

In 1915 Dr. Friedenwald[6] published his monograph "The Ophthalmias of Palestine." After a comprehensive survey of the

literature on that subject, the author reported on about 2,000 cases examined by him personally during the period June 22 to August 4, 1914. Half of the cases examined comprised only children, 54 per cent. of whom suffered from trachoma, and the percentage varied in different schools between 8 per cent. and 85 per cent. Dr. Friedenwald's report deals chiefly with Safed, Tiberias, and the colonies of Lower Galilee. His report contains also some statistics of his last examination of the Haifa school children. He also examined the Judean colonies Rehoboth and Ekron. In the former the percentage of trachoma amounted to 31.5 per cent., varying in different schools between 21 per cent. and 73 per cent. In Ekron he found among the children 43 per cent. of active trachoma which together with the cases of cured trachoma came to 71 per cent.

Of the late treatises on this subject I would mention Dr. A. Telavivi-Malchi's[7] article (published, 1918) "Das Trachom in Palaestina," dealing chiefly with reports of the above-mentioned meeting on trachoma in Jerusalem.

Finally, I should like to mention here the article published by myself[8] in 1922, containing the results of my investigations in the Jaffa schools (excluding the Gymnasium) during May, 1921. I examined 2,045 children of elementary schools and kindergartens. Of active trachoma there were 653 cases=31.8 per cent., of cured trachoma 124 cases=6 per cent., the total percentage of trachoma being then 37.8 per cent.

In the *Lancet*[17] of September 30, 1922, Drs. Ticho and Kligler stated that the incidence of trachoma in Palestine was in inverse ratio to the age and was a disease of young children. Dr. Kligler maintains that trachoma has no acute epidemic characters. It is transmitted by direct contact during the purulent stage. The chronic stages are not so infectious.

I.—Statistics

Trachoma in the Jewish Schools in 1913-14

(See Table I, Diagrams No. 1 and No. 2.)

From the above data gathered almost simultaneously by various ophthalmologists for the period of 1913-1914 a comprehensive idea may be obtained of the spread of trachoma in the Hebrew city schools as well as in the country schools. The data are shown in Table 1, the figures for Jerusalem and Judea being taken from the reports of Dr. Ticho and Dr. Feigenbaum which were read at the trachoma meeting. The figures for Jaffa were taken from Dr. Krinkin, and for Haifa, Tiberias, and Lower Galilee from Dr. Friedenwald.

From this table we see that in 1913-14, 9,329 children were examined in the Hebrew schools of Palestine. Among them there were 2,423 cases of active trachoma (26 per cent.), 188 cases of cured trachoma (2.7 per cent.), the total number of children infected by trachoma being 2,611 (28.7 per cent.). In the towns the percentage of active trachoma varies between 23.3 per cent. in Haifa, 26.2 per cent. in Jerusalem, and 83.2 per cent. in Tiberias (202 m. below sea-level). In the colonies of Judea the percentage of active trachoma came to 24.5 per cent., and in the colonies of Lower Galilee 38.7 per cent.

Trachoma in the Hebrew Schools in 1918-19

(Table I, Diagrams No. 1 and No. 2.)

In the middle of 1918 all the medical work among the Jewish population of Palestine was transferred to the American Medical Zionist Unit, called afterwards "Hadassah" Medical Organization (H.M.O.)," which organization still carries on its work. A special commission of medical men was appointed by the Zionist Executive Committee for the investigation of the distribution of both malaria and trachoma in Palestine. The work began at the end of 1918 and was concluded at the beginning of 1919.

The oculist of the H.M.O., Dr. Krimsky, examined the spread of trachoma in the Hebrew urban and rural schools. He examined 8,506 children, 3,465 (*i.e.*, 40.7 per cent.) of whom suffered from active trachoma, and 1,056=12.4 per cent. from cured trachoma; the total of trachoma cases being 4,521=53.1 per cent. In the towns the percentage of active trachoma varied: in Jerusalem 21.6 per cent., Haifa 49 per cent., Safed 55 per cent., Tiberias 78.3 per cent. As to Jaffa the percentage of active trachoma was indicated as high as 64.8 per cent., but only 182 children had been examined. It is probable that, had all the children of Jaffa been examined, the percentage of trachoma would have been lower, but still that percentage must have been relatively high, since my observation made in May, 1921 (after a year's experience in the schools) showed no less than 31.8 per cent. of active trachoma. On an average there was 34.5 per cent. of active trachoma in the towns. In the colonies the percentage of active trachoma varied between 45 per cent. in Samaria, 46 per cent. in Lower Galilee, 49 per cent. in Judea, and 64.5 per cent. in Upper Galilee, the average percentage of active trachoma in the colonies being then 50.6 per cent. On comparing the figures for 1913-14, when 9,329 were examined, with those for 1918-19 when 8,506 pupils were examined, it is seen that in 1913-14 there was 26 per cent. of active trachoma as against 40.7 per cent. in 1918-19, the total

percentage of trachoma (including cases of cured trachoma) being 28 per cent. in 1913-14 against 53.1 per cent. in 1918-19 (see Table 1, Diagrams No. 1 and No. 2). This enormous spread of trachoma in the course of five years may be easily explained by the precarious position of the Palestine population in general and by the sufferings of the Jewish population during the war in particular. The distressed condition on the one hand and the lack of medical assistance on the other hand contributed greatly to the spread of trachoma. The population of the rural districts suffered much more than that of the towns. With the outbreak of war most colonies were deprived of every medical assistance, and consequently the percentage of active trachoma in the colonies was one and a half times greater than in the towns.

Trachoma in the Hebrew Schools in 1923-24

(Table I, Diagrams No. 1 and No. 2.)

The fight against trachoma gradually extended. The systematic trachoma crusade organized by the Hadassah Medical Organization began in the schools of Jerusalem 1918, in the Jaffa schools 1919, in Haifa 1920, in Safed at the beginning of 1921, and in Tiberias at the end of 1921. It was not until the early months of 1924 that the fight against trachoma was begun in the Jewish colonies. Up to that time the colonies had been visited by oculists at intervals only.

For the uniform indication of the types of trachoma the following scheme was agreed to:

First Stage.—Trachoma granules cover the retrotarsal fold of the upper or lower lid, or are found in the plica semilunaris, or on the caruncle.

Second Stage.— Trachoma granules cover the conjunctiva of the tarsus, or are found in the tarsus itself.

Third Stage.—Is recognized by hypertrophic scars of the conjunctiva.

Fourth Stage.—Cured Trachoma.

Complicated trachoma (pannus, trichiasis), defective sight, blindness, various forms of conjunctivitis and other eye diseases are shown in separate columns.

Number of School Children and of Medical Staff

The H.M.O. has now about 14,000 children under its control. seven oculists are charged with the treatment of eye diseases, two of whom reside in Jerusalem, one at Jaffa, one at Haifa, one at Tiberias, one at Safed, and one is appointed for systematic inspection in the colonies. There are also in the colonies of Lower Galilee eight physicians in charge of the general medical

work who superintend the work of the nurses (Lower Galilee 2, Upper Galilee 3, Samaria 1, Judea 2). In addition to the work in the schools there are ophthalmic clinics with 150 to 300 and even more daily attendances. In addition to physicians specialized in their work there are employed in the schools twenty eye nurses under direct medical control (in Jerusalem 10, Tel-Aviv-Jaffa 5, Haifa 2, Tiberias 3). In the colonies ten nurses are employed (Judea 3, Samaria 2, Lower Galilee 5). Nurses also work in the colonies and give the population of the colonies assistance under the instructions of the doctor. The sum spent by the H.M.O. for the treatment of eye diseases in the schools amounted to 3,383 L.E. in 1923-24.

According to the system in use the doctors inspect the schools at the beginning of the scholastic year. Every child has its trachoma schedule. The inspecting doctor diagnoses and prescribes accordingly, the eye nurse being charged with the treatment according to the doctor's prescriptions. Such an inspection takes place not less than once in two months, kindergartens and schools where there is much trachoma being inspected as often as once a month. Children suffering from acute conjunctivitis are excluded from school and sent to the clinic for treatment. Children infected with follicular trachoma are also sent to the clinic for treatment and operation (expression of granules), and are only allowed to attend school again after complete cure. Follicular cases of trachoma should be excluded from school. No child is admitted to school in the course of the scholastic year without a doctor's certificate regarding the state of its eyes. The treatment is performed by nurses every day in special rooms in the schools. The most simple methods of treatment are being employed. Massage with a cotton applicator moistened in hydr.-oxicyanat. (1 :2,000); massage with unguent. flav. 2 per cent.; instillation of protargol 5 per cent.; argent. nitr. 1 per cent.; zinc sulph. 0.5 per cent.; copper sulphate (crystal and 5 per cent. solution). In every complication of the cornea the child is excluded from school and sent to the clinic for treatment. It is not only the treatment of disease, but the prophylactic treatment of the eye that gives so much work to the nurses. All pupils are being treated—especially in summer—with a zinc solution of 0.5 per cent. or a 3 per cent. protargol solution. Experience has shown that where prophylactic treatment has been employed the percentage of acute inflammations (conjunctivitis acuta) which used to spread epidemically in Palestine in the summer months, has perceptibly diminished. Prophylactic treatment is particularly important in schools where trachoma-infected children come in contact with uninfected ones. If possible, infected children are separated from healthy ones. Separate kindergartens are arranged for trachoma-infected children.

TABLE I.

TRACHOMA IN JEWISH SCHOOLS IN PALESTINE

IN CITIES AND COLONIES IN THE YEARS 1913/14, 1918/19, AND 1923-24.

	1913/14							1918/19							1923/24						
Place	Examined	Trach. Active	Per cent.	Trach. Cured	Per cent.	Total Trach.	Per cent.	Examined	Trach. Active	Per cent.	Trach. Cured	Per cent.	Total Trach.	Per cent.	Examined	Trach. Active	Per cent.	Trach. Cured	Per cent.	Total Trach.	Per cent.
Cities:																					
Jerusalem	6437	1690	26.2	69	1.1	1759	27.3	3471	752	21.6	784	22.6	1536	44.2	5764	511	8.8	762	13.2	1273	22
Jaffa ...	846	90	10.6	—	—	90	10.6	182	118	64.8	15	8.2	133	73	3273	528	16.1	489	14.9	1017	31
Haifa ...	459	107	23.3	27	5.9	134	29.2	583	286	49	21	3.6	307	52.6	1094	116	10.6	106	9.7	222	20.1
Tiberias	185	154	83.2	17	9.8	171	92.4	517	405	78.3	18	3.5	423	81.8	735	358	46	83	11.3	441	57.3
Safed ...	—	—	—	—	—	—	—	359	197	55	33	9	230	64	412	122	29.6	44	10.6	166	40.2
Chebron	—	—	—	—	—	—	—	111	45	40.5	6	5.4	51	45.9	95	15	15.7	13	13.6	28	29.3
Total ...	7927	2041	25.76	113	1.42	2154	27.2	5223	1803	34.5	877	16.8	2680	51.3	11373	1650	14.5	1497	13.1	3147	27.6
Colonies:																					
Judea ...	1128	276	24.5	36	3.16	312	27.7	1396	684	49	70	5	754	54	1606	338	21	196	12.2	534	33.2
Samaria	—	—	—	—	—	—	—	415	187	45	19	4.6	206	49.6	239	66	27.6	13	5.4	79	33
Galilea L.	274	106	38.7	39	14.2	145	52.9	855	393	46	38	4.4	431	50.4	165	37	22.4	26	16	63	38.4
GalileaU.	—	—	—	—	—	—	—	617	398	69.5	52	5.4	450	72.9	87	28	32.2	22	25.3	50	57.5
Total ...	1402	382	27.2	75	5.4	457	32.6	3283	1662	50.6	179	5.4	1841	56	2097	469	22.3	257	12.2	726	34.5
Total of Cities and Colonies	9329	2423	26	188	2.7	2611	28	8506	3465	40.7	1056	12.4	4521	53.1	13470	2059	15.3	1754	13.3	3873	28.6

DIAGRAM No. 1.

TRACHOMA IN JEWISH SCHOOLS IN PALESTINE

IN TOWNS AND COLONIES IN THE YEARS

1913-14, 1918-19, and 1923-24.

(For total number of cases see Table No. 1.)

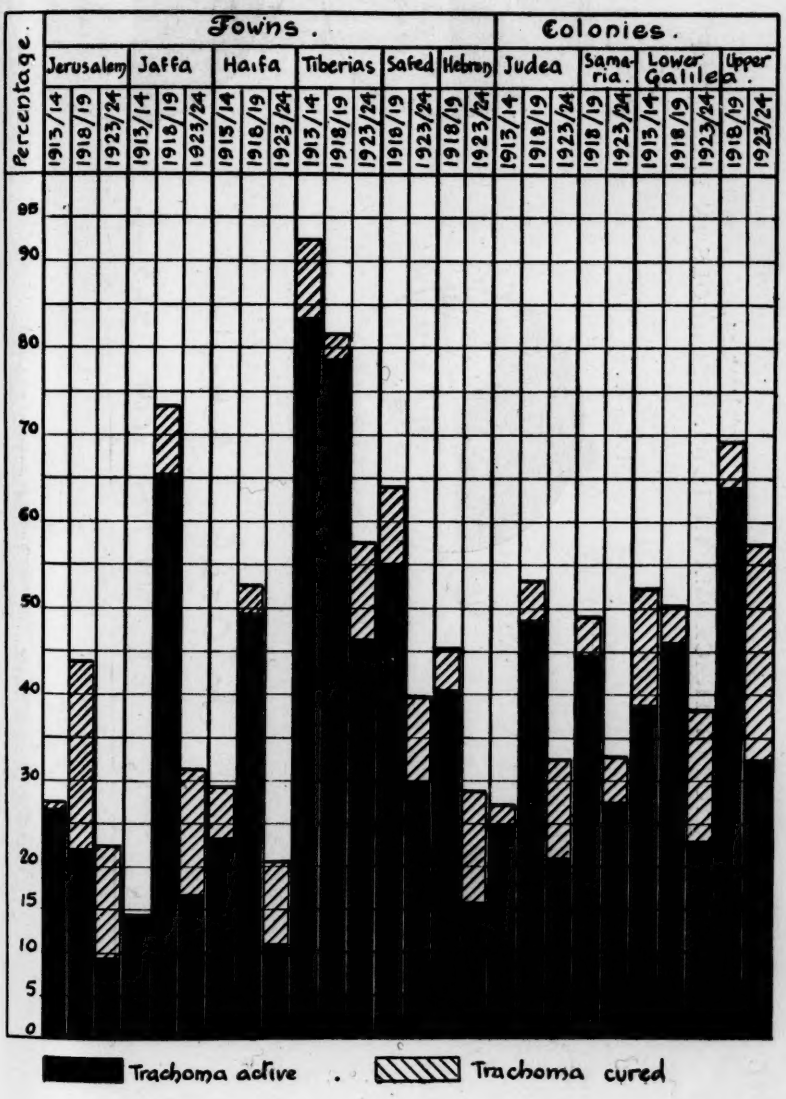
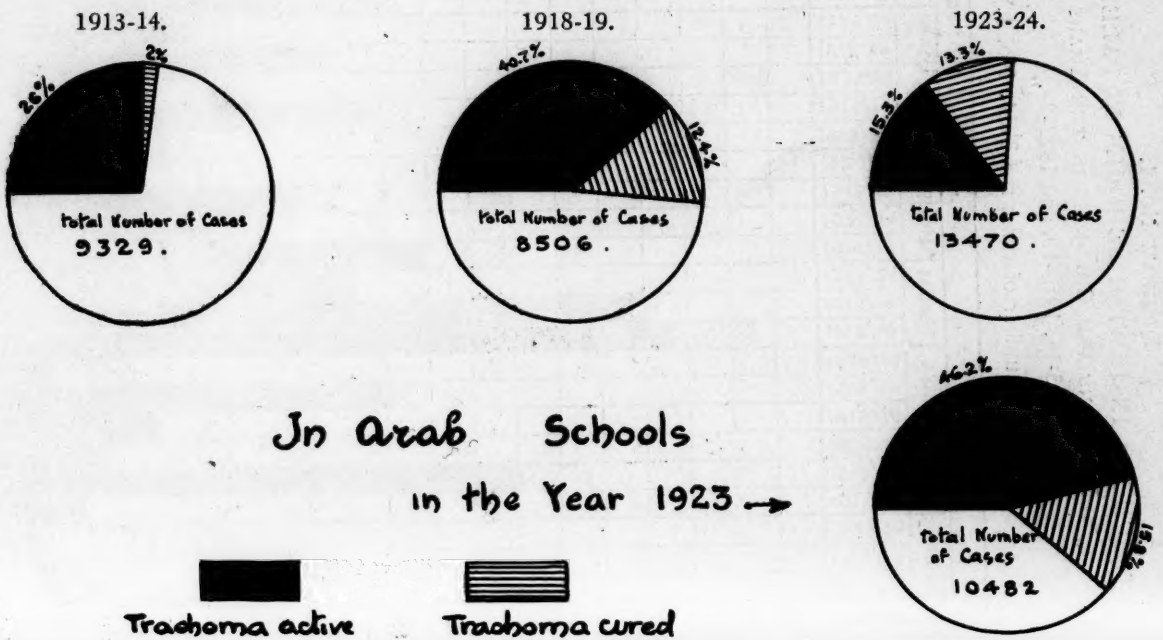


DIAGRAM NO. 2.

TOTAL TRACHOMA IN JEWISH SCHOOLS IN PALESTINE

IN THE YEARS



Where there is no possibility of separating infected children in special groups or classes, special desks are assigned to them, every teacher being provided with a list of the trachoma-infected pupils. In kindergartens with much trachoma, games where the children hold one another by the hand are prohibited. All teachers are instructed that any secretion coming from the eye may be contagious.

At every inspection the doctor makes a detailed statement of all the eye diseases. On every schedule the date of inspection, the diagnosis and the method of treatment are stated. Detailed daily reports regarding the children under treatment are made by the nurses. On an average 300 to 500 children (dependent on the number of the trachoma cases in any particular place) are treated by one nurse. All the inspection reports made in the schools of Judea are sent to the district oculist in Jerusalem. Those made in the schools of Samaria, Upper and Lower Galilee, and Emek Jizrael are sent to the district oculist at Haifa. These reports containing all the remarks of the district oculists have to be sent to the Central Administration of the H.M.O. in Jerusalem, where all the statistical material is prepared. It is this statistical material received from the Central Administration of the H.M.O. that has enabled me to compile Table 1 and Diagrams No. 1 and No. 2, which show the number of trachoma cases in the Hebrew schools during the scholastic year 1923-24.

Trachoma in the Hebrew Schools in 1923-24

In the above-mentioned year 13,470 children had been examined, 2,059=15.3 per cent. of whom suffered from active trachoma and 1,754=13.3 per cent. from cured trachoma, the total amount of trachoma cases being then 3,873=28.6 per cent. In the towns there were 1,656=14.5 per cent. of active trachoma, and 1,497=13.1 per cent. of cured trachoma. In the colonies there were 469 cases=22.3 per cent. of active trachoma and 257=12.2 per cent. of cured trachoma. In consequence of the growth of the number of children in the schools of Jerusalem, Tel-Aviv and Haifa caused by the unceasing stream of immigration the figures quoted do not convey any precise idea of the success of the trachoma crusade, whereas the statistical figures concerning Safed, Tiberias, and the Jewish colonies which have remained almost untouched by the immigration, and have had the same population as before the war, will throw some light on the decline of trachoma.

On comparing the spread of trachoma for some years past we learn that in Safed there were 55 per cent. of active trachoma in 1918-19, and 29.6 per cent. in 1923-24. In Tiberias there were 83.2 per cent. of active trachoma in 1913-14, 78.3 per cent. in 1918-19 and 46 per cent. in 1923-24, which means that two and a half

years of systematic treatment caused a 50 per cent. fall in trachoma. In the colonies there were in 1913-14, 27.4 per cent. active trachoma, in 1918-19, 50.6 per cent., and only 22.3 per cent. in 1923-24. The last figures show that even in such places as the Jewish colonies where trachoma has not been so systematically treated, the percentage of active trachoma fell by more than half. In order to convey a precise idea of the results of the trachoma crusade which were gained in the Hebrew schools it would be interesting to compare the absolute figures of the spread of active trachoma as well as of cured trachoma during the following quinquennia: 1913-14, 1918-19, 1923-24 as represented in Table 1 and Diagrams No. 1, No. 2.

Years	1913/14	1918/19	1923/24
Active Trachoma	2,423	3,465	2,059
Cured ,, ...	188	1,056	1,754

On comparing these absolute figures we see that active trachoma in 1923-24 was one and a half times less than in 1918-19. The cases of cured trachoma in 1923-24 exceeded those of 1918-19 by one and a half times and by nine times the number shown for 1913.

The decline of trachoma is still better illustrated by the figures taken from particular towns.

CASES OF ACTIVE TRACHOMA IN

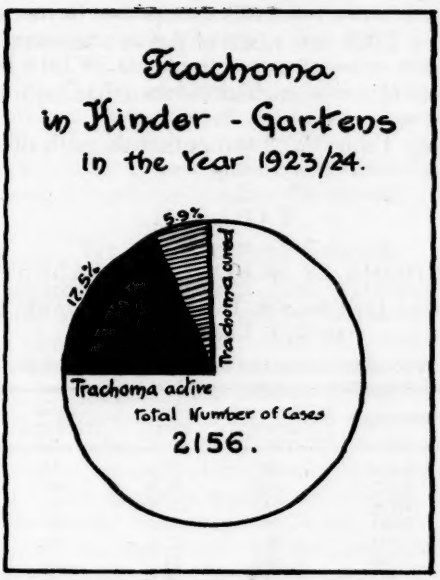
	1913-14	1918-19	1923-24
Jerusalem	1,690	752	511
Haifa	107	286	116

The above figures show clearly that since 1920, when the treatment of trachoma began, the number of trachoma cases fell by two and a half times. From the above figures for Jerusalem it follows that the number of trachoma cases in 1923-24 fell by three times when compared with 1913-14 and by one and a half times when compared with 1918-19. This comparison is much the more important as it clearly shows how active trachoma may be successfully combated particularly in its first and second stages. When the third stage of trachoma is reached the fight against it is much more difficult and its treatment requires months and even years of constant work.

The above figures also show that the number of active trachoma cases does not rise, notwithstanding the annual addition of new trachoma cases in our schools. The continual influx of new trachoma cases into our schools comes through two channels: (1) through immigration; (2) through the family. Together with

the healthy children coming from Russia, Poland, Austria, etc., we get a considerable number of diseased ones from Persia, Yemen, Kurdistan, and Caucasia. Most children infected with trachoma, however, come from the families of the original Sephardim and also Aschkenasim who have lived in Palestine for a long time, and not only got infected themselves with trachoma through association with the Arab population but also transferred that disease to their children. Finally, let it be said that in many families, where the

DIAGRAM NO. 7.



parents do not suffer from that disease, trachoma is being spread through the Arab servant, or, as it is the case in the Jewish colonies, through close association with the Arab population, the latter, as we shall see being more infected with trachoma than the Jewish population.

The data of the Hadassah Medical Organization which are based on the investigations made in the kindergartens (chiefly attended by children three to five years old) show that out of 2,156 children there were 33. (1.5 per cent.) of trachoma suspects; 14 cases (0.65 per cent.) of trachoma in the first stage, 98 cases (4.5 per cent.) of trachoma in the second stage, 234 (10.8 per cent.) of trachoma in the third stage, and 127 cases (5.9 per cent.) of trachoma in the fourth stage (see Diagram No. 7).

In other words, there were 506 (23 per cent.) children at the age of three to five infected with trachoma, among whom there were 127 children with trachoma in the fourth stage (cured trachoma) and these must have been infected at the age of two, and long before having entered the kindergarten.

These results correspond with the data contained in the review of literature, and again verify the fact that trachoma in Palestine is a disease of the child in its earliest age, the infected parent—usually the mother—being responsible for its spread.

Suppose that no less than 400 children with active trachoma enter the schools every year, this means that in the last five years there have been 2,000 new cases of active trachoma. If we add thereto the 3,465 cases of active trachoma in 1918-19, we should have 5,465 cases of active trachoma if there had been no systematic treatment. Now we have only 2,050 cases.

The following Table No. 2 shows that through the treatment in the schools trachoma is becoming less.

TABLE II.

TRACHOMA IN SCHOOLS IN PALESTINE.

IN TOWNS: JERUSALEM, HAIFA, SAFED, AND TIBERIAS IN THE YEAR 1923/24.

Showing Distribution according to Age.

Age	Examined	Active Trachoma	Per cent.	Cured Trachoma	Per cent.
3— 6	1,074	185	17.2	44	4.1
6— 7	1,165	208	17.8	184	15.8
7— 8	1,126	202	17.9	144	12.8
8— 9	1,081	166	15.3	130	12
9—10	834	102	12.2	112	13.4
10—11	769	113	14.7	99	12
11—12	501	47	9.6	64	12.7
12—13	420	31	7.4	36	8.6
13—14	237	23	9.7	21	4.6
14—15	315	17	5.4	19	6
15—16	56	2	3.6	5	8.9
16—17	42	—	—	1	2.4
17—18	36	—	—	2	5.5
18—19	27	—	—	1	4
Total	7,683	1,096	14.26	862	11.2

This table refers to children in the kindergartens aged from three to six, and in various elementary schools and gymnasia aged from six to eighteen. The total number of school children in Jerusalem, Haifa, Safed, and Tiberias is 7,683.

These results show us that the percentage of trachoma is in inverse ratio to the age of the children, and the younger the

children are the higher is the percentage of trachoma, and the longer the children attend school the lower is the percentage of active trachoma. We find the maximum of active trachoma among children between three and ten years of age, and between six and ten years we find the maximum of cured trachoma. Beginning with the age of ten there is a decline in the percentage of active trachoma and at the age of three to eight, *i.e.*, the first years of the child attending a school there is an increase in the percentage of active trachoma. In other words, *the school does not in the least contribute to the spread of trachoma and cannot be the source of contagion; provided that prophylactic and systematic treatment is employed.*

P. Wibaut and W. H. Smit[9] came to the same conclusion, namely, that the family and not the school is responsible for the spread of trachoma in their article "La lutte contre le trachome à Amsterdam dans les dernières années."

Table No. 2 and Diagrams Nos. 3 and 4 clearly show that the earlier treatment begins the quicker the disease disappears.

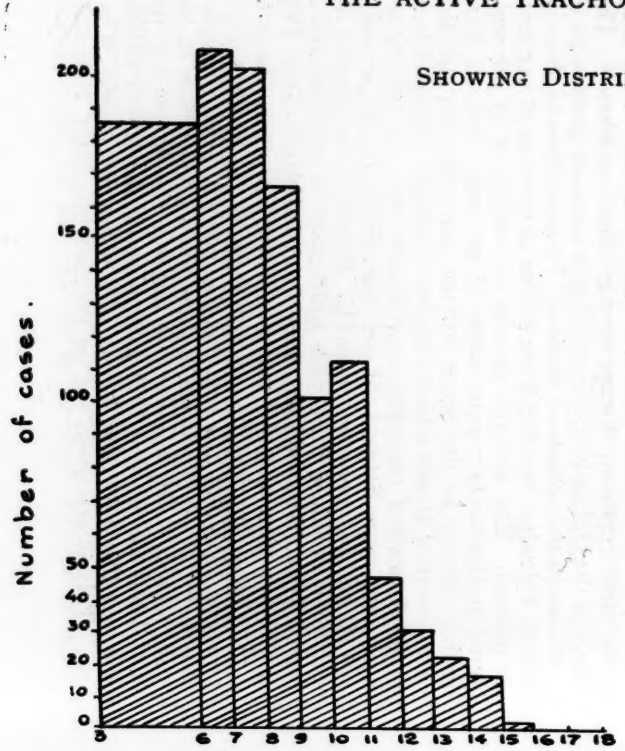
Trachoma in Arab Schools

The data regarding trachoma in Arab schools have been taken by me from the Annual Report of the Department of Health of the Palestine Government for the years 1921, and 1922 and 1923. In the report for the year 1921 it is stated that "Trachoma is by far the most important disease among school children." The P.M.O. of the Ophthalmic Hospital found a greater percentage of this disease in the schools of Southern Palestine than in those of Northern Palestine, in some of the former as many as 97 per cent. were infected. The statistics showed an average of 74 per cent. infected in the whole country while 15 per cent. suffered from defective vision. In the report for the year 1923 the statistics show a total of 10,480 school children examined among whom were 6,497 cases of trachoma, *i.e.*, 62 per cent. Of this figure 7.5 per cent. were Stage I, 31 per cent. Stage II, 36 per cent. Stage III and 25.5 per cent. Stage IV. Therefore from among all the children examined there were 4,840 cases of active trachoma (Stages I, II and III), and 1,657 cases of cured trachoma (Stage IV), *i.e.*, 46.3 per cent. and 15.7 per cent. respectively (see Diagram No. 2). Comparing these figures with those for the Jewish schools for the year 1923-1924 it is seen that the number of cases of active trachoma in the Arab schools is three times greater than in the Jewish schools. If, however, we compare the figures for the Arab schools for the year 1923 with those for the Jewish schools in the year 1918-1919 there is very little difference, namely, 6 per cent. This is accounted for by the fact that until systematic

DIAGRAM No. 3.

THE ACTIVE TRACHOMA IN CITIES: JERUSALEM, HAIFA, TIBERIAS, SAFED

SHOWING DISTRIBUTION ACCORDING TO AGE IN YEAR 1923-24.



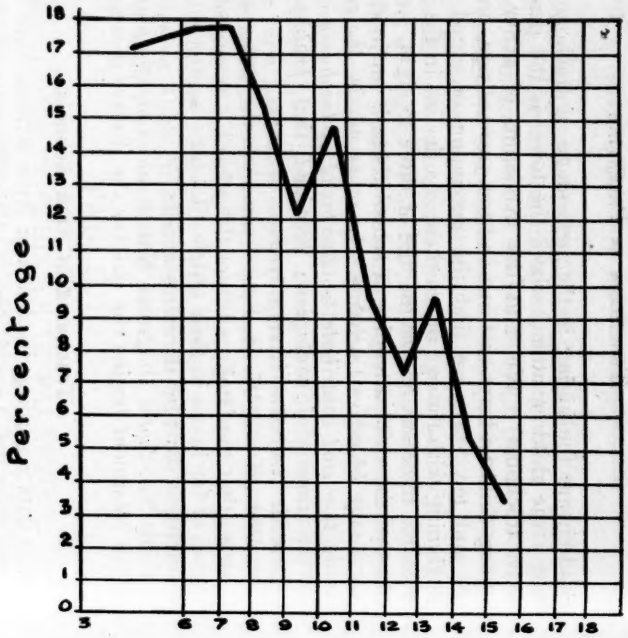
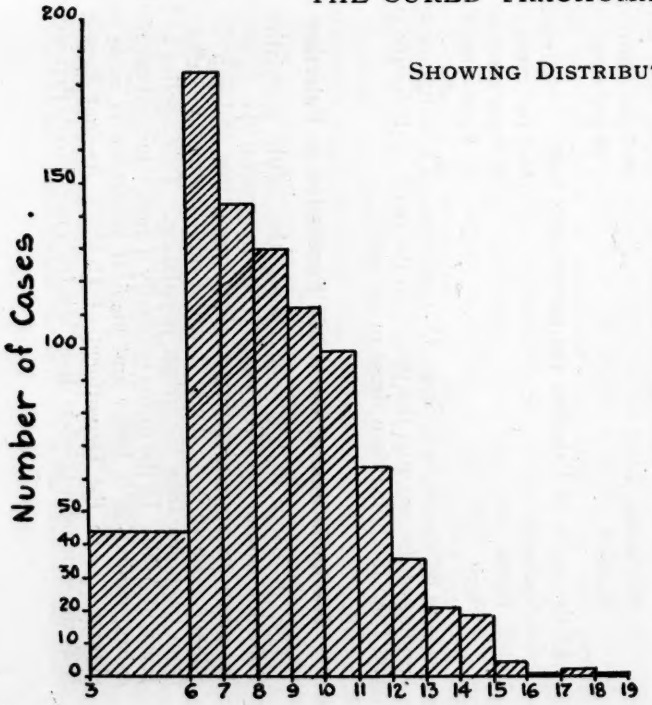
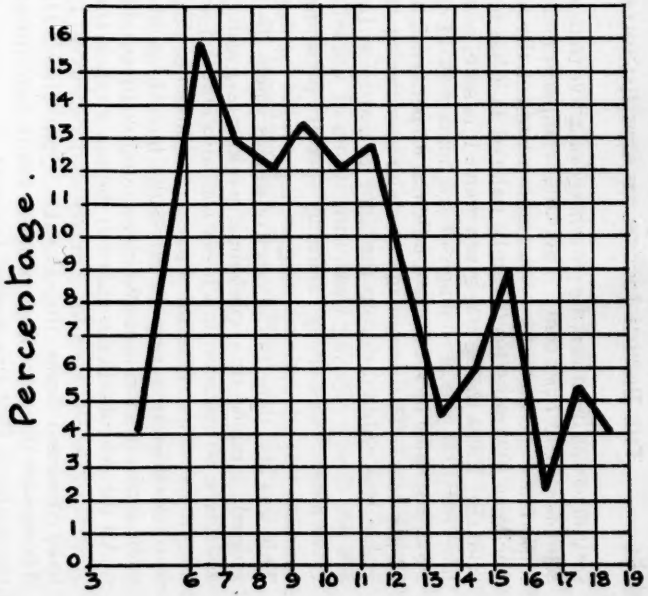


DIAGRAM NO. 4.

THE CURED TRACHOMA IN CITIES: JERUSALEM, HAIFA, TIBERIAS, SAFED

SHOWING DISTRIBUTION ACCORDING TO AGE IN YEAR 1923-24.





treatment was instituted the percentage of active trachoma in Jewish schools was 40.7 per cent. This latter comparison is of very great importance because by systematic treatment the percentage of trachoma in Arab schools can be reduced as it has been in Jewish schools. From the figures given above it is seen, however, that in the year 1921 the percentage of trachoma was 74 per cent. and two years later in 1923 it had fallen to 62 per cent., a reduction of 12 per cent. The percentage of children suffering from defective vision was reduced during the same period from 15 per cent. to 5.3 per cent. During these three years of work in schools the Government was busy training special personnel. Special courses of ophthalmic training were provided for medical officers. This was also done in the cases of nurses where the lack of such, properly trained in ophthalmic work, was greatly felt. The assistance of teachers in schools was also enrolled and they were taught the more elementary parts of treatment. Taking all this into consideration very good results have been obtained in a comparatively short time and under none too favourable conditions.

All the schools do not suffer to the same extent from trachoma. According to statistics for January and February, 1924, which I have obtained from the P.M.O. Ophthalmic Hospitals (Dr. Thompson) the percentage of trachoma in Government schools in the south of Palestine was as follows:

Beersheba	88.7 per cent.
Ramleh	70 per cent.

In the north of Palestine the percentages were:

Nazareth	43.1 per cent.
Haifa	45.8 per cent.
Acre	22.7 per cent.

These figures include Stage IV trachoma. These figures again emphasize the fact that the people in the north of Palestine suffer less from trachoma than those in the south.

Trachoma among the Adult Population in Palestine

The incidence of trachoma among the adult population of Palestine cannot be fixed exactly but in general the figure may be taken as approximating to that among the children in the schools. There is no doubt that the rural population suffer more from trachoma than the urban population. This applies to both Jew and Arab. In the towns generally a more educated population exists, sanitation is better and medical assistance is more easily obtained. In the Department of Health's Annual Report for 1922 the statement is made that "it is from the schools that accurate

detailed information regarding the amount of eye diseases has been obtained and it is found that 97 per cent. of the population of Southern Palestine have trachoma; 69 per cent. in Nablus; and in some of the schools of Acre in Northern Palestine not more than 15 per cent." This high incidence of trachoma, especially in the south of Palestine, is very serious as it brings in its train many serious conditions of the eyelids and the cornea. During a period of ten months while working in the vicinity of Nablus and Ramleh the Government Travelling Ophthalmic Hospital dealt with 4,381 persons and 90.6 per cent. of these had trachoma and 31 per cent. of these cases of trachoma were suffering from trichiasis.

II.—The Epidemiology of Trachoma in Palestine

Reviewing the prevalence of trachoma in the Arab schools and among the adult Arab population I have indicated more than once that the south of Palestine is more affected by trachoma than the north. This diminution of the prevalence of trachoma from south to north of Palestine is not without a definite cause. First of all, it refutes the idea that the race plays any rôle as a predisposing factor in the acquiring of trachoma. While the population of Palestine is almost homogeneous (Arabs-Moslems 78.03 per cent., Arabs-Christians 9.64 per cent., and Jews 11.06 per cent. of the total population), yet the difference in the prevalence of trachoma is quite marked in spite of the small size of the country (the south border is 31° N.L., the northern border is 33° 10′ N.L.). Race predisposition to trachoma has been long ago denied (Axenfeld[10]), also there is neither climate nor country that is "immune" to trachoma (Axenfeld[10], Stanculeanu[11], Paparcone[12]. Under certain living conditions, every race and every nation, independent of the degree of latitude or longitude it resides in, can be affected by trachoma. As an illustration I can cite the prevalence of trachoma among the German settlers of Haifa and those of Russia—on the shores of the river Volga. In the review of literature the fact was mentioned that Dr. German in 1896 found not a single infection with trachoma among 103 children of German settlers in Haifa; at the present time there are only two to three families among the German settlers of Haifa affected with trachoma, while the trachoma incidence among the German schools in Russia—Volga districts—is very high, more than 20 to 24 per cent. (Scheffer[18]). Altitude likewise is not a factor in immunity against trachoma. It suffices to mention from the review of literature in the year 1913-14 that in Jerusalem—830 metres above sea-level—the trachoma prevalence in some schools reached 81 per cent., and in Tiberias—202 metres under the sea-level—the trachoma prevalence was 83 per cent. (1913-14). Undoubtedly, the main factor in the spread of trachoma is the sanitary conditions

under which the population lives. Where there is much uncleanliness and dirt—there is also prevalence of trachoma. Among the Jewish population we find the largest percentage of trachoma in the schools frequented by children of the type of population resembling in habits the native population or Arabs (Sephardic, Jemenite, and Persian Jews). This condition is clearly brought out by the accompanying table, giving the comparative incidence of trachoma among the various types of the Jewish population.

Name of Town or Colonies	Type of Jewish population	No. of Children examined	No. of cases of Active Trachoma	Per cent.
Rishon l'Zion } Colonies	Jemenite	19	14	73.6
Rehoboth } of	,,	41	30	73.1
Khudera } Judea	,,	16	14	87.4
Jerusalem	Persian	32	13	40.6
Haifa } Alliance	Sephardic	333	91	27.3
Israelite School	Aschkenasim	105	8	7.6

Remark: See also Table I. Jerusalem, Haifa and Colonies in Judea.

As far as the sanitary conditions of the Arab population in the villages are concerned, it is only necessary to see their mud huts without adequate light or ventilation, to see the whole family lying on the dirty floor or sleeping on unwashed and unclean bedding, to see the children dirty and uncared for, with pus discharging from their eyes, beset by multitudes of flies. It is sufficient to see this picture only once to realize how easy is the spread of any contagious disease among a people living under such conditions. Although the causative virus of trachoma has not yet been discovered, it has been, however, proved by a considerable number of workers that trachoma is a contagious disease, spread by direct or indirect contact. Under the conditions the Arabs live in, the spread of disease by direct contact is a constant factor. Flies, as it has been proved by experiments (Nicolle, Guénod and G. Blanc[13]), undoubtedly play a rôle in the spread of trachoma (indirect method of contagion). Since the trachoma infection is both virulent and contagious during the whole active period of the disease, the diluted virus exists in the tears of the trachoma patient, and the smallest wound of the conjunctiva can serve as an entrance gate for the trachoma virus (Nicolle, Guénod[13]), it is easy to understand why trachoma spreads to such a large extent in Palestine. Besides, trachoma is a chronic disease, and in the absence of proper treatment it lasts for years. In the course of the disease children come in direct contact with parents sick with trachoma, sleep in the same bed, use the same towel or wash-basin as the sick parents do. They are thus bound to become infected with the disease. The climate of Palestine favours the

development of trauma of the conjunctiva and facilitates the entrance of the trachoma virus; also through constant irritation of the diseased conjunctiva it causes increased lacrymation and discharge of diluted trachoma virus.

Speaking of the trauma of the conjunctiva due to the climate of Palestine, it is necessary to consider not only the strong radiation of the sun, the temperature, the amount of rains, but also the geological character of the soil of Palestine and her water supplies. The strong radiation of the sun's rays causes thermal and light trauma to the conjunctiva. The conjunctiva of the sclera in the palpebral fissure under constant action of the rays of the sun is subject to burns, which clinically manifest themselves as hyperaemia and oedema of this portion of the conjunctiva. This "conjunctivitis solaris" like any other irritation of the conjunctiva calls forth increased lacrymation.

As to the geological character of Palestine: the soil is mainly of limestone formation; the coastal plain is covered by sand dunes and to the south of Beersheba begin the sands of the Sinai desert. In the summer drought the roads and trees are covered with limestone dust. The lightest wind carries a cloud of dust which covers the eyelashes and penetrates into the eyes, causing both mechanical and chemical trauma. The sand of the dunes to the south and that of the Sinai desert also injures the conjunctiva. The summer heat, by causing the working people frequently to wipe the sweat from face and eyes with dirty hands or handkerchiefs, also helps in the inclusion of the trachoma virus into the traumatized conjunctiva.

Besides these forms of conjunctival trauma, there exists in the summer time a form of acute conjunctivitis of bacterial origin, which is also affected by the climate. In my paper: "Les maladies des yeux à Caiffa"[14] I showed that this acute conjunctivitis has a uniform character throughout Palestine, is independent of altitude, latitude or longitude, but depends upon the temperature and especially the amount and distribution of rainfall. The largest number of cases of acute conjunctivitis is found during months when the temperature is highest and the largest number of Koch-Weeks infections is found after there has been no rain for about three months.

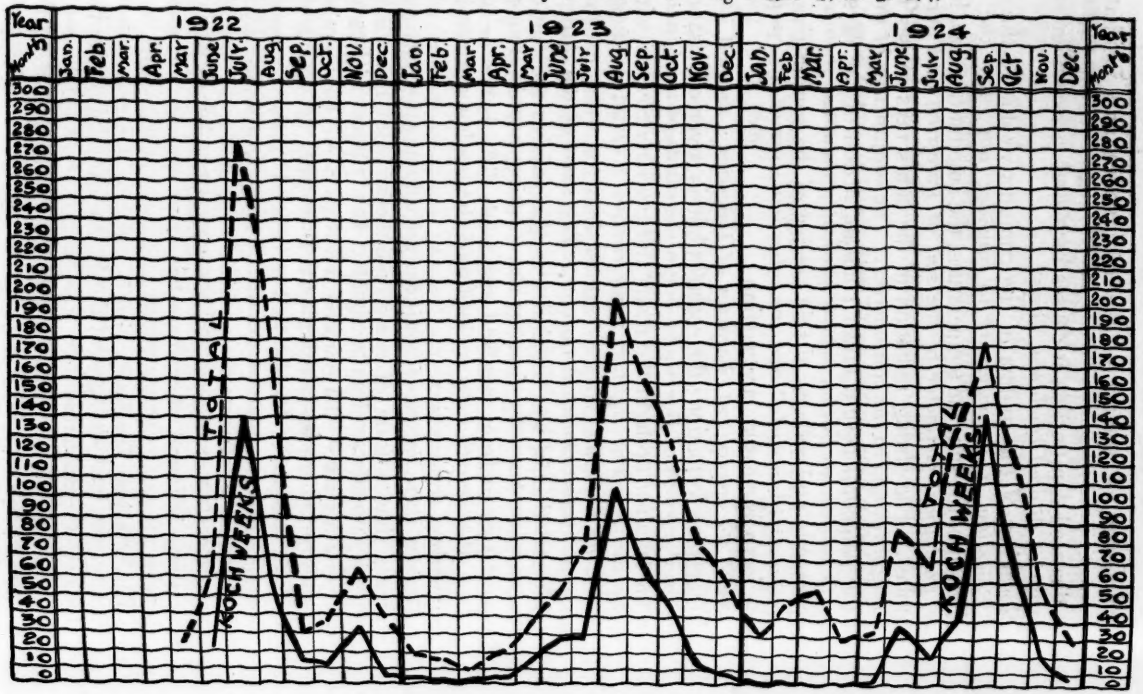
The attached Diagrams No. 5 and No. 6 prepared by Dr. E. Krause, the bacteriologist of the Haifa Hospital of the Hadassah Medical Organization, on the basis of 2,444 bacteriological examinations of the material from the eye clinic during the years of 1922, 1923, and 1924, give a clear picture of the causes of the acute and chronic conjunctivitis. These causative factors are characteristic of the whole country, both as to the time of their appearance and as to their percentage relationship.

DIAGRAM No. 5.

BACTERIOLOGICAL EXAMINATIONS OF ACUTE CONJUNCTIVITIS

MADE BY DR. MRS. E. GINZBERG-KRAUSE.

Of the "Hadassah" Laboratory at Haifa during Years 1922-23-24.



Year	1922												
Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
B. Koch-Weeks ...	—	—	—	—	—	22	139	60	14	11	33	4	283
Morax-Axenf. ...	—	—	—	—	5	9	2	4	—	1	1	4	26
Pneumococ. ...	—	—	—	—	2	2	—	—	—	—	1	—	5
B. Xerosis	—	—	—	—	5	1	25	7	—	2	1	4	45
Neisser (Gonococ.)	—	—	—	—	—	—	—	8	1	2	1	1	13
Staphylococ. ...	—	—	—	—	—	—	—	—	—	—	—	—	—
Mixed infect. ...	—	—	—	—	—	—	—	—	—	—	—	—	—
Total examination	—	—	—	—	25	65	280	180	30	36	65	39	720

Year	1923												
B. Koch-Weeks ...	3	1	1	4	11	28	28	106	65	46	12	6	311
Morax-Axenf. ...	1	2	1	5	8	5	4	7	5	3	—	7	48
Pneumococ. ...	1	—	2	—	—	3	3	4	6	1	—	5	25
B. Xerosis	1	1	1	1	3	5	3	11	11	6	1	2	46
Neisser (Gonococ.)	—	—	—	—	1	—	—	—	1	8	1	—	11
Staphylococ. ...	—	—	—	—	—	—	—	—	—	5	1	1	7
Mixed infect. ...	—	—	—	—	—	—	—	1	2	—	3	3	9
Total examination	18	14	9	20	31	51	76	202	166	127	76	58	848

Year	1924												
B. Koch-Weeks ...	1	1	—	—	4	38	19	40	146	64	21	5	339
Morax-Axenf. ...	1	2	6	6	5	6	5	5	3	3	—	—	42
Pneumococ. ...	—	5	1	—	1	2	1	—	—	2	3	—	15
B. Xerosis	1	1	5	1	2	8	—	—	—	1	1	2	22
Neisser (Gonococ.)	1	1	2	—	4	—	—	4	10	7	5	2	36
Staphylococ. ...	1	3	—	—	—	—	2	—	—	—	—	—	6
Mixed infect. ...	—	2	3	—	1	5	—	2	14	3	—	—	30
Total examination	31	46	54	29	33	87	67	137	181	125	57	29	876

GRAND TOTAL FOR 1922/23/24.

B. Koch-Weeks	933
Morax-Axenf.	116
Pneumococ.	45
B. Xerosis	113
Neisser (Gonococ.)	60
Staphylococ.	13
Mixed infect.	39
Total examination	2,444

B. Koch-Weeks is the chief cause of the acute conjunctivitis, beginning in May, reaching the peak in the hottest and driest months—July and August—and sometimes extending through September. The last rains in 1923 in Haifa were in May and in 1924 in June. The Koch-Weeks epidemic in 1924 was one month later than that in 1923. With the onset of cooler and rainy weather the Koch-Weeks epidemic ceases. At the end of the Koch-Weeks epidemic a small epidemic of gonococcic (Neisser) infection breaks out. There are also mixed forms of infections—Koch-Weeks and pneumococcus; Koch-Weeks and Morax-Axenfeld; Koch-Weeks, Gonococcus-Neisser. These last forms of conjunctivitis (there were ten cases from Nazareth and Tira in 1924) are usually accompanied by corneal destruction (ulcus corneae and prolapsus iridis).

The following table represented in Diagram No. 6 gives the bacteriological findings in the acute and chronic conjunctivitis in Haifa during 1922, 1923, and 1924:

	Cases.		Per cent.
Bac. Koch-Weeks	933	=	38.2
Bac. Morax-Axenfeld	116	=	4.7
Bac. Pneumococ.	45	=	1.9
Bac. Xerosis	115	=	4.6
Gonococ.-Neisser	60	=	2.5
Staphylococ.	13	=	0.5
Mixed infection	39	=	1.6
Negative	1,123	=	46.0
	2,444		100

These forms of acute conjunctivitis, besides causing various corneal complications when trachomatous infection is present, also serve as a factor in damaging the conjunctiva and facilitating the penetration of the trachoma virus.

In addition to the climatic conditions of Palestine facilitating the spread of trachoma, there are other factors acting as an obstacle in the fight against trachoma. One of these factors is either the shortage of water (in Jerusalem and the Southern portion of Palestine) or the limited use of water because of the distance of the houses from the source of water supply.

On the basis of what has been stated above, considering for each place the factors serving as a cause of trauma to the conjunctiva, *i.e.*, the number of cloudless days, temperature, amount of rainfall, the character of the soil, house accommodation, the standard of living of the population, one is able with relative

DIAGRAM NO. 6.
BACTERIOLOGICAL EXAMINATIONS OF ACUTE CONJUNCTIVITIS

DIAGRAM NO. 6.

BACTERIOLOGICAL EXAMINATIONS OF ACUTE CONJUNCTIVITIS

MADE BY DR. MRS. E. GINZBERG-KRAUSE,

Of the "Hadassah" Laboratory, Haifa, during Years 1922-23-24.

certainty to explain why there is more trachoma in the south and less in the north of Palestine. First of all, in the north there is less limestone dust, and fewer sand dunes, there is a larger supply of water, greater rainfall, and a less crowded population. In Acre which is only ten kilometres distant from Haifa, the percentage of trachoma among the school children is only half of that found among the school children of Haifa. Other conditions being equal, Acre has a good water supply, while Haifa has not. Housing conditions are also better than in Haifa. Gaza which, like Haifa, is on the sea level, but lies in the southern border of Palestine, has much more trachoma than Haifa. The explanation for this can be found in the fact that Gaza has more cloudless days, that there are 418 millimetres of rainfall per annum, while in Haifa there are 608. Gaza has more sand dunes and dust, and it is subject to the action of the prevailing winds from Sinai desert. The reason for the large prevalence of trachoma in Tiberias can be found in the facts that the annual rainfall is 450 millimetres, that during the four or five summer months there are no rains at all; the average atmospheric temperature is three to four degrees higher, and the number of cloudless days larger than in the coastal plain; in short, in Tiberias there are at play a larger number of factors that cause trauma to the conjunctiva and create favourable conditions for the penetration of the trachoma virus. The attached table gives the amount of rainfall, cloudless and mean temperature for each month of the year in Haifa, Sarona, Gaza, Nazareth, Jerusalem, Hebron, Tiberias. This table is taken from the "Annual Review of the Agricultural Situation in Palestine," 1922[19] (see Table III).

III.—Means of Combating Trachoma in Palestine

As previously indicated the incidence of trachoma in Palestine is very high and the great question is how to fight against the disease among an ignorant population. There can be little doubt that a general improvement in education and the conditions of life in general will be one of the greatest aids towards its eradication. As an example I may state the fact that among the children at the better class Jewish schools there is little or no trachoma. Among the pupils of the Jerusalem "Gymnasium" during the year 1923 there was not a single case of trachoma while among those of the "Real" school at Haifa there was only one (less than 0.5 per cent.). As has been noted in the review of literature on the subject the same low incidence was noted in the "Gymnasia" of Jerusalem and Jaffa in the years 1913-1914. Trachoma is found in those Jewish schools where the children of the poorer classes are educated and who come from homes where the standard of

TABLE III.

MEAN RAINFALL mm

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Haifa	9 Yrs.	156.0	89.9	53.8	24.9	6.9	0.8	—	—	1.8	20.8	91.9	161.8	608.6
Sarona	10 ,,	191.0	73.9	36.8	6.9	4.8	—	—	—	0.8	14.0	112.0	178.8	619.0
Gaza	10 ,,	110.0	49.8	36.8	6.9	7.9	0.8	—	—	0.8	20.8	80.0	104.9	418.7
Nazareth	15 ,,	144.8	103.9	84.8	23.9	5.8	—	—	—	—	16.8	77.0	161.8	618.8
Jerusalem	20 ,,	159.0	117.9	88.9	38.9	6.9	—	—	—	—	9.9	64.0	143.8	629.3
Hebron	15 ,,	156.7	116.1	86.9	51.1	7.1	1.8	—	—	—	13.5	54.1	128.3	615.6
Tiberias	18 ,,	114.8	73.7	59.9	22.9	3.8	—	—	—	—	14.0	59.9	110.0	459.0

MEAN TEMPERATURE C.

Haifa	9 ,,	12.2	14.2	15.8	18.8	21.4	24.4	26.6	27.5	26.6	23.9	17.9	14.6	—
Sarona	10 ,,	11.6	12.6	14.5	17.3	20.8	22.7	25.2	25.8	24.7	22.1	17.6	13.9	—
Gaza	10 ,,	11.7	13.3	15.4	18.3	21.5	23.7	26.1	26.5	25.0	23.9	18.2	15.2	—
Nazareth	15 ,,	9.5	11.8	13.5	17.3	20.6	22.3	24.3	25.1	24.4	23.2	17.4	12.4	—
Jerusalem	20 ,,	6.9	8.8	10.8	15.1	19.0	21.2	22.8	22.8	21.5	19.5	14.6	9.4	—
Hebron	16 ,,	6.8	8.6	10.4	14.6	18.6	20.6	21.9	22.8	21.5	19.3	13.7	9.3	—
Tiberias	18 ,,	12.6	14.7	26.6	20.5	25.1	28.0	29.9	30.5	29.1	26.7	20.4	15.8	—

MEAN CLOUD 0-10.

Haifa	9 ,,	5.2	4.6	4.7	3.7	3.0	2.5	2.6	2.5	2.1	2.6	4.2	5.1	—
Sarona	10 ,,	4.2	3.9	4.3	3.2	2.6	1.7	1.6	1.4	1.6	1.8	3.9	4.4	—
Gaza	10 ,,	3.6	3.1	3.3	2.5	2.4	1.7	1.6	1.8	1.8	2.1	3-2	3.5	—
Nazareth	15 ,,	4.9	4.6	5.4	4.3	3.5	2.2	3.5	3.6	2.3	2.5	4.5	5.1	—
Jerusalem	20 ,,	5.2	4.8	5.1	3.9	2.9	1.2	0.8	1.0	1.3	2.5	3.7	4.9	—
Hebron	16 ,,	5.8	5.3	5.4	3.7	1.7	0.5	0.5	0.5	1.0	2.1	3.8	3.9	—
Tiberias	18 ,,	6.2	4.6	4.3	3.1	1.2	0.5	0.5	0.6	1.1	1.0	4.1	4.5	—

education and habits of life are low and who in general live under conditions similar to the Arab population. The problem of the moment is to find a rapid and satisfactory method of dealing with trachoma under these existing unfavourable conditions.

The Treatment of Trachoma among School Children as a means of Combating the Disease

As a result of the work of the Hadassah Medical Organization in Jewish schools during the past five years trachoma has fallen from 40.6 per cent. to 15.3 per cent., and in the work of the Government in Government schools the figure has fallen from 74 per cent. to 62 per cent. We can therefore fairly assume that this method is showing success. The treatment in schools is important not only from the point of view of the treatment *per se* and the fact that the child is constantly under medical supervision, but from the fact that he learns early in life the importance of the hygiene of his eyes and carries into the home the principles instilled into him with regard to the care of his eyes. I have frequently seen cases at our dispensary where children have brought their parents for ophthalmic treatment. The school is thus not only a centre of education in its narrower sense, but a means of disseminating the doctrine of hygiene and health throughout the land. This is particularly important in the case of the Arabs, the bulk of whom are illiterate or nearly so and have no ideas whatever of hygiene in general, let alone eye hygiene. Working on these lines the first thing to be done is to increase the number of schools as far as possible and endeavour to get as many of the population as possible in their early youth. Trachoma can thus be dealt with in its early stages, before it begins to give rise to complications of the eyelids and eyelashes (entropion and trichiasis) or of the cornea (pannus, ulcers), and as a further consequence maculae and leucomata which bring about diminution of visual acuity, and thus render the sufferer a less useful member of the community.

The following figures indicate the great importance of treating trachoma efficiently in its early stages:

Year	No. of Children examined	Entropion and Trichiasis	Pannus	Macula Corneae	Staphyl. Corneae	Phthisis Bulbi
1918—1919	8,395	123	40	99	14	31
1923—1924	13,470	6	18	49	—	—

The above figures show the complications affecting the eyelids and corneae of children attending Jewish schools in the years 1918-1919 and 1923-1924. It is thus seen that entropion and trichiasis

can be reduced almost to a minimum. Pannus during five years has been reduced more than 50 per cent. and maculae and corneal leucomata by 50 per cent. More than half of the 49 cases of macula corneae are a legacy from the days of the war, and the remainder are the result of affections of the cornea following severe conjunctivitis contracted prior to school age. Staphylomata and phthisis bulbi have disappeared. *By systematic treatment in the schools not only has trachoma been reduced but also all other affections of the conjunctiva* (Shimkin[14]).

The undernoted figures are taken from the Government report for the year 1923[20]:

NUMBER OF SCHOOL CHILDREN AND THEIR DISTRIBUTION IN TOWNS AND VILLAGES (URBAN AND RURAL AREAS.)

	No. of Schools	No. of Boys	No. of Girls	No. of Teachers
Government Schools—				
Towns	47	5,298	2,756	332
Villages	267	10,748	529	340
Non-Government Schools ...	397	19,657	14,479	1,701
Totals	711	35,703	17,764	2,373

According to the census of October, 1922, the total population of Palestine was 757,182. The total number of school children is 53,467 which is 7 per cent. of the total population. The most important fact which the above table brings out is that of the total of 314 Government schools only 47 are in the towns. This is from our point of view most satisfactory because it is in the villages that the greater part of our endeavour must lie. If all the village schools of the Government are not all that could be desired from the point of view of hygiene they are at least infinitely better than the miserable hovels of the villagers. According to the census referred to above the whole of the rural population of Palestine (*i.e.*, village population) was in 1923, 389,534, and in village schools there were 11,279 pupils, *i.e.*, only 2.9 per cent. The total number of girls was only 529. This is due to the fact that the Arab population in the villages care very little about female education. The total number of children in Palestine in the age group 5 to 15 years is 154,980 of which number 85,778 are boys and 69,202 are girls. The total number of children at school is

53,467, hence there is 34 per cent. of the children in the age group 5 to 15 years at school. The schools thus constitute a large eye dispensary and one where the attendance is more or less regular. We can therefore now see that:

(1) Trachoma in Palestine is a disease contracted in very early life.

(2) Treatment of trachoma in its early stages prevents those complications of the lids and cornea which endanger the vision.

(3) Trachoma in its early stages can be cured rapidly by medical or surgical treatment.

(4) Schools form by far the best centres for treatment, supplying as they do a large complement of patients who can be kept under constant supervision.

(5) The value of these school clinics is enhanced by the fact that they disseminate ideas of hygiene among the population.

Therefore the increase in the number of schools, particularly in the villages, combined with systematic treatment of the children attending them, appears to be the best means of dealing with trachoma in Palestine under the present conditions. This is particularly applicable to the Arab population.

Ophthalmic Treatment available for the General Public in Palestine

At present eye treatment is rendered by certain Government clinics and various voluntary organizations. According to the Government Report for the year 1923[20] the Voluntary Dispensaries dealt with a total of 203,311 patients of whom 51,060 were eye cases. During the same period the Government Dispensaries handled 67,634 patients of whom 17,291 were eye cases. Thus out of a total of 270,945 patients there were 68,351 cases of eye disease, *i.e.*, 25.2 per cent. of the total patients or 9 per cent. of the total population.

Special eye treatment on a large scale is rendered by the following institutions:

(1) The British Ophthalmic Hospital (Order of St. John) at Jerusalem, which has fifty beds for eye cases and dealt during 1923 with a total of 14,537 cases.

(2) Hadassah Medical Organization, which has twenty beds available for eye cases and dealt during the same period with 13,519 cases at its various clinics (Jerusalem, Tel-Aviv, Jaffa, Haifa, Tiberias, and Hebron).

(3) St. Louis (French) Hospital which dealt with 8,053 cases during the same year.

The total number of Voluntary Dispensaries in Palestine which provide special facilities for eye treatment is 30, of these 8 are in Jerusalem, 2 in Hebron, 2 in Bethlehem, 7 in Jaffa, 1 in Gaza, 4 in Haifa, 1 in Nablus, 2 in Nazareth, 2 in Tiberias and 1 in Safed. The Government has ophthalmic clinics in Jerusalem, Hebron, Ramallah, Beersheba, Jaffa, Ramleh, Gaza, Beisan, Nablus, Haifa, Acre, and Tulkarem. It is of interest to note that the Government Clinic at Nablus was visited by nearly 10,000 eye cases during the year 1923 alone. In addition during the years 1919 to 1923 a very large amount of eye treatment was rendered to the Arab population in the villages by the Government Travelling Ophthalmic Hospital. It is greatly to be regretted that this hospital had to be closed down for lack of means to support it. It existed for 31 months and dealt with 14,801 patients of whom 64.2 per cent. were infected with trachoma. There is only one private ophthalmic hospital: this is in Jerusalem and has 30 beds. The total nmber of ophthalmic specialists in the year 1923-24, *i.e.*, physicians dealing exclusively with ophthalmic cases is 17. Of these 7 are in Jerusalem, 6 in Tel-Aviv (Jaffa), 2 in Haifa and vicinity and 2 in Upper and Lower Galilee districts.

Method of dealing with Trachoma among Adult Population

Dealing with children in schools has been found the best way of handling trachoma in their case. A constant attempt to improve the general sanitary circumstances of the dwellings and surroundings of the population appears to be the best way of approaching the matter in the case of the adult population. Every endeavour must be made to combat flies which are the chief means of disseminating the trachoma infection (Nicolle-Guénod[13], David[5]) and acute conjunctivitis (Shimkin[14]). The population must be made aware that trachoma is a very contagious disease and information as regards prophylaxis must be spread. As a very large number of the Arab population are illiterate this method is difficult. The use of dark spectacles is also useful as a protection from dust and glare (Fuchs[16]).

The foregoing are only prophylactic measures, however, and bring no relief to the three-quarters of the population that are already infected with trachoma. For these treatment is necessary, and for this purpose more ophthalmic specialists, hospitals, and dispensaries are required. Seventy beds for ophthalmic cases is too little in a population of 800,000 people. An increase of the number

of physicians with a knowledge of external eye diseases and capable of making an accurate diagnosis is much required. In this connection Dr. J. Strathearn of the British Ophthalmic Hospital in Jerusalem is giving special courses of instruction in eye diseases to both doctors and nurses of the Government service. The Hadassah Medical Organization is also specially training doctors and nurses who are subsequently sent to the Jewish colonies all over the country. Municipal and village authorities must also be interested in the work. The efforts of the Government and voluntary institutions combined with an interest and help on the part of local authorities, better education, improved sanitary conditions in general and a general improvement in the standard of living cannot fail to bring about a large decrease in eye disease in general and trachoma in particular. It is also of importance to mention that the ignorance of the Arab village population serves as a great hindrance in the fight against trachoma in Palestine. The village Arab consults a physician only after serious complications have set in. The usual question of the sick man or woman is whether it is permissible to wash the hair and eyes at least once a week. It seems that the people have learned through experience that water or washing in common basins serves as a medium of transmission of trachoma or other eye infections. It is also necessary to mention the custom among the people to receive treatment from the hands of the village "healer," to place faith in the wearing of a "charm" (Canaan, T.[15]) as a means of preventing eye infections. They also paint their eyelashes (with "Kohl asmar"*) not only for cosmetic purposes but also with the idea of preventing eye infections; this paint is smeared on with a stick used by all, thus helping to spread any infection which may exist. A popular method of treating eye diseases is by burning the temples and neck with a heated iron, or blood letting by making incisions on the neck, hands, and legs, packing these wounds with dirty rags or beans or peas in order to produce suppuration and thereby relieve the eye trouble. One has frequently great difficulty in convincing the patient that he must remove this drain from the sloughing wound.

Vast improvements, however, cannot be hoped for at once; it must be remembered that other countries affected with trachoma have spent a large amount of time and money before the disease was reduced to any great extent, or eliminated.

In this respect I may quote some figures from Belgium showing the decline of trachoma in the army (Paparcone[12]).

* This is prepared by mixing powdered lead sulphide with oil until a paste is formed. This is heated thoroughly until almost dry and is then painted on the borders of the upper and lower eye lids just above the eye lashes.

							Cases of Trachoma
In the year	1840	among	1000	soldiers	there	were	200
„	„	1845	„	„	„	„	166
„	„	1850	„	„	„	„	111
„	„	1855	„	„	„	„	30
„	„	1890	„	„	„	„	0.98
„	„	1900	„	„	„	„	0.67

It will be seen from this that it took 60 years of constant work to effect the reduction.

In spite, however, of the immensity of the task before us in Palestine, it is hoped that the measures already indicated combined with a better economic situation and the improvements in the standard of life which must inevitably follow, will bring about a very great decrease in trachoma in that country.

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A NEW ANATOMICAL NOTATION OF THE VISUAL FIELD

BY

DR. M. URIBE TRONCOSO

NEW YORK

THE examination of the visual field deserves a more important place in the routine examination of the eyes than it now holds. Not only the beginner but the practising ophthalmologist as well, are deterred from a wider use of this method by the many complexities and loss of time its practical application entails. For this reason the simplification and improvement of our present technique will do much in promoting a better understanding and larger application of this important diagnostic agency.

One of the first technical difficulties the beginner has to deal with, is the way of recording the visual field on the chart. As mapped now the findings in the perimeter need to be inverted twice. First comes the physiological inversion by which the image formed in the retina is projected to the opposite side of the eye. This requires the readings of the position of the test carrier to be made on the side of the perimeter opposite to the part of the retina under examination. The second inversion is made necessary by the habit of considering the visual field in relation with the position of the examiner's eye, and requires a total transfer of the findings for charting the right side of the patient's eyes to the right side of the observer's eye, the left side to the left, etc. This double inversion is the result of a faulty mental habit and is in complete violation of the anatomical rule which requires the subject to be considered always standing in front of the observer.

In a previous paper[1] I have emphasized the confusion and misunderstanding that the departure from this basal anatomical rule has produced in all ophthalmological descriptions and the advantages to be derived from the change to one standard position instead of two. The present method of recording the field of vision was probably originated by the primitive use of the blackboard and afterwards of the campimeter, in which the examiner places himself behind the patient. The limits of the field and scotomas are drawn on the blackboard in relation to the eyes of both, considered in the same position on the space, and the mapping, when necessary, is very simple, as it only requires a similar drawing on a reduced scale. This method had the advantages of enabling the observer to visualize the conditions on which the visual cone of the patient is projected into space,

and to refer all changes to the examiner's own right and left sides. With the advent of the perimeter, however, conditions for the examination of the fields changed entirely. The observer had to stand in front of the patient for moving the test carriers, reading the findings on the arc, and watching the central fixation of the eye. This change of position immediately required a readjustment of the mental picture of the visual cone of the patient, now extending in front of the observer, the right side of the patient corresponding to the left of the physician. The physiological inversion of the retinal images could be more clearly understood and recorded on the arc of the perimeter in this position, the larger temporal field corresponded to the larger extent of the nasal retina, and the restricted nasal field to the shorter area of the temporal retina; the blind spot being about in the centre of the percipient layer of this membrane (Elliot). But when the findings in the arc were to be recorded on the chart, no change was made to meet the new conditions, and the old schemes were used, with the result that a second inversion became necessary to map the temporal field A of the patient's eye (Fig. 1), at the corresponding point B of the observer's eye. This second inversion although relatively easy for a trained ophthalmologist, is difficult and requires a considerable mental effort for the beginner. The transfer is much easier in the four cardinal points, viz.: temporal, nasal, upper and lower meridians, but for intermediate positions, 30° or 60°, 300° or 330°, which need to be recorded at the same inclination on the corresponding side of the observer's eye, the difficulty increases a great deal, especially if, as frequently happens, the graduation of the meridians in the card is different from those in the perimeter.

In order to avoid the inevitable confusion and misunderstanding of the double inversion, the self-registering perimeters were devised. In the simpler instruments the chart is carried by a disc which rotates with the arc, and the markings are made on the side of the same colour, red or white, of the figures of the arc. Even with this perimeter, however, when the observer, for saving time, tries to use both sides of the arc alternately, the same embarrassment and confusion arises in regard to the place for marking and the inclination of the meridians. Only in the more expensive and complicated models are the records made automatically accurate.

The difficulties of this faulty, irksome method of recording the visual field are particularly evident when the student tries to determine to which part of the field a given defect or lesion in the retina corresponds. The mental habit of considering the relative positions of the papilla and the macula as we see them with the ophthalmoscope, makes it difficult for the observer to

transpose immediately to his own eye the position of the blind spot in the patient's fields. With the ophthalmoscope the papilla is seen inward and a little upward of the macula, and

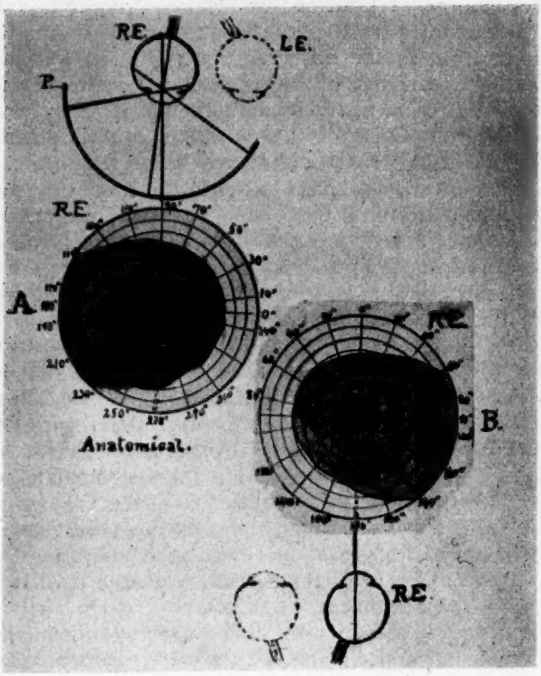

FIG. 1.

A. Position of the field of vision in front of the patient's eye in the anatomical method. R.E., Right eye. P., Perimeter. A, temporal side of the field. The graduation of the meridians is the same as in the trial frame.

B. Temporal side of the field of vision as recorded at present, facing the observer's eye. The plotting needs a second inversion and is confusing and misleading.

according to the law of visual projection it is easily located on the arc of the perimeter, outside and a little below the fixation point. But when we try to mark its position in the diagram it will be necessary to carry what in the eye ground is at the patient's right to our own right, and afterwards imagine its relations with the other parts of our own fundus.

It is even more arduous to find the place which in the patient's field of vision will correspond with a characteristic change found with the ophthalmoscope. A thrombosis of the superior nasal artery of the right eye, for instance, will produce a sector-like defect in the opposite side of the field, that is in the inferior

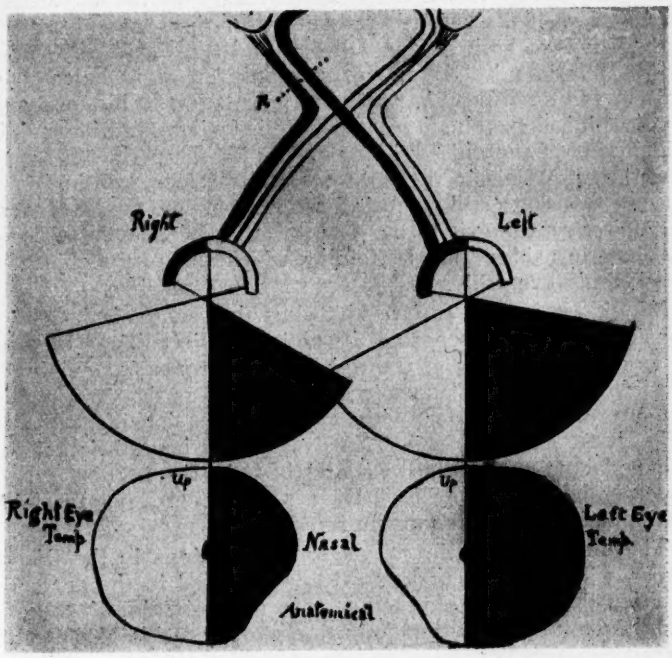

FIG. 2.

Schematic representation of the optic pathways, fields of vision on both sides as projected in the space in front of the observer, and records of the fields in the anatomical position.

temporal quadrant. With the perimeter this defect will be immediately found in its proper place, but if the observer tries to visualize the ophthalmoscopic lesion and then represent to himself the defect produced in the field, he will have to transfer the lesion first to his own eye, and then locate the defect in the opposite side according to the law of visual projection.

Probably on account of the early use of the campimeter and the facility of representing the pathological changes in the patient, the description of diseases of the central nervous system has also been

made considering the observer as standing behind the patient. The well-known diagrams of the central nervous system, the tracts, optic nerves and correlation of the two retinas are always represented, in the unanatomical position; the only advantage of this is to be able to visualize the lesions as if they existed in the physician's own organs and designate the right and left sides by the same names. This has, however, numerous disadvantages. In hemianopsia, for instance, if the lesion is present in the right optical tract, the right halves of both retinas will be blind (Fig. 2). The patient, by the physiological inversion, sees only the right halves of all objects and describes his symptoms in relation to his own body. In our clinical examination the patient is facing us and explaining which side of the objects he sees. With the perimeter we find that the nasal field in the right eye and the temporal field in the left are wanting; still following the custom, we ought to record the defect referring it to our own eyes, and make the diagnosis by changing sides and ascertaining which side of the objects our hemianopic eye will see.

Would it not be easier, following the anatomical rule, to consider the visual cones of the patient projected into the space in front of the observer, the right field in front of the right eye, the left before the left, and record the fields as they are found in the arc of the perimeter, with only one inversion instead of two (Fig. 1, A, and Fig. 2)? The visual cones have their apices in the nodal points of each eye and base in the infinite, but the observer needs to consider only a section, corresponding either to the perimeter or the tangent screen.

The same as with the perimeter, the findings in the Bjerrum screen will be better understood and recorded in the anatomical position than by the old method. In fact it is difficult to understand how the plotting made in the graduated side of the curtain facing the observer, was not immediately recorded in a diagram exactly as it was found, instead of making the second inversion to the examiner's eye.

No change in our instruments is necessary for the new method, except that the campimeter should be made of cloth for thrusting pins and marking the limits and defects in the field on the side facing the operator.

With the adoption of the new anatomical field it would be important to standardize the notation of the meridians in the charts, which at the present time is very confusing. In some charts 0° is placed above, 180° below, and 90° on either side of the horizontal meridian for both eyes. In others for the right eye the 0° is above, 90° at the left of the patient, 270° to his right and 180° below. For the left eye 90° is at the right of the patient and

270° to the left, the vertical meridian being the same as in the other eye.

In America the most accepted notation is 90° above, 270° below, and the 0° at the left side of the patient. In the anatomical field it will be desirable to adopt the last-mentioned notation, and represent the inclination of the meridians exactly in the same way as the axis of the cylinders in the trial frame, that is the 0° always at the left of each eye of the patient, 180° to the right, 90° above, and 270° below (Fig. 1, A). In this way it will be easy

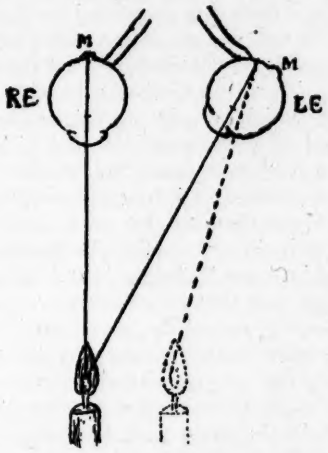

FIG. 3.

Homonymous diplopia. The deviation of the left eye inward makes the image of the candle fall at the inner side of the macula, M, and this image is projected outward, where a false image is seen at the left.

to find the inclination of every meridian and draw an accurate diagram even on a provisional chart, by comparison with the trial frame.

I am well aware that this complete change in the mapping of the visual field will find a great opposition amongst ophthalmologists, who being trained in the double standard position, have acquired the habit of the mental process required to make the inversion quickly and without any mental strain. They will find it unnecessary or even inadvisable to depart from their habits, but for the beginner in ophthalmology to be taught in the anatomical position to which he has been accustomed, will mean much time saved and much effort spared.

The transition between the old and new method is very simple. New charts may be printed with the same diagram they have at

present, not exactly inverted, but as seen by translucency; the temporal side of the chart in front of the temporal side of both orbits of the patient. Even the old charts can be put to service, simply changing sides, the right eye being used for the left and *vice versa*; but of course the graduation in the meridians will become inverted, which is not desirable.

Fixation Field.—The monocular and binocular fields of fixation will be more easily understood and recorded in the anatomical position, than after the inversion necessary for transferring them to the position of the observer's eye.

In paralytic strabismus the examination of the binocular field of fixation with the tangent screen in the six cardinal directions will detect the limitation of movement, the extent of the field for single and double vision, the kind of diplopia, and the separation of the two images, which can be plotted on the white side of the screen and recorded on the anatomical card without any inversion. This will give the student a much better idea of the situation of the false image in space and its relations with the retina of the patient, as he can visualize by the deviation of the optical axis the new location of the image outside the macula and the direction in which the false image will be projected (Fig. 3).

It is a well-known fact that the chapter on abnormal motility of the eye is considered one of the most difficult to grasp by the student. The normal anatomy and physiological action of the extraocular muscles are taught with the cadaver or subject in the standard anatomical position, but the abnormalities in the function are considered not in the same way, the proper scientific method, but by reversing the findings to the observer's own eye, thus creating a double system for the study and interpretation of these complicated symptoms with inevitable confusion and misunderstanding.

In a paper presented to the Ophthalmological Section of the American Medical Association in May of this year, Dr. Luther C. Peter, of Philadelphia[2], endorses this anatomical method, and gives added reasons for the adoption of one universal standard instead of two. The same author in a personal communication, states also his belief in the necessity of changing the recording of the field of vision to the more scientific and accurate anatomical position.

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2. **Luther C. Peter.**—Anatomic Method of studying and recording the Motility of the Eyes. *Trans. Sec. Ophthal., Amer. Med. Assoc.*, May. 1925.

RESIGNATION OF MANAGING DIRECTORS

AT the annual general meeting of the shareholders of the BRITISH JOURNAL OF OPHTHALMOLOGY the two Managing Directors, Mr. J. B. Lawford and Mr. Leslie Paton, retired from the offices which they have held for the past nine years and were succeeded by Mr. Ernest Clarke and Mr. A. H. Levy.

The Editorial Committee wish to record the esteem and affection in which these two gentlemen are universally held by their colleagues in the management of the journal, and the indebtedness to them of ophthalmology throughout the Empire.

When Mr. Jessop died after a very brief illness in February, 1917, the journal was barely six weeks old. It was a very critical time, we had hardly found our feet, and it is not too much to say that if the management had not been immediately placed in safe hands disaster might easily have overtaken us. No words of ours are needed to remind our readers of the debt of gratitude the journal owes to Mr. Lawford and Mr. Paton. The *mens provida* of the former, together with his international reputation which stands for all that is best in British ophthalmology, coupled with the ungrudging hard work and business ability of the latter enabled us to ride out the storm. Now that the journal is safe, with an established reputation to maintain, and if possible to improve, we know that our readers will never forget what our late Managing Directors have done for us and for English ophthalmology.. We are glad to know that we shall continue to have the benefit of their advice at the meetings of the Editorial Committee. While all can judge of the results, only those of us who have had the privilege of working with them can appreciate to the full the amount of labour they have so ungrudgingly given.

In laying down their directorial duties they carry with them the gratitude of all their colleagues and of all who care for British ophthalmology. With Horace each may say *Et militavi non sine gloria*. To the BRITISH JOURNAL OF OPHTHALMOLOGY each has been, in the words of Homer πολλῶν ἀντάξιος ἄλλων, worth a multitude.

ANNOTATIONS

The Opticians Bill

On another page we have printed a précis received from the Ministry of Health of the proceedings which took place at the reception of a Deputation of the Joint Council of Qualified Opticians, with which was associated the British Optical Association, to the Minister, the Rt. Hon. Neville Chamberlain, with regard to the above Bill.

Mr. Neville Chamberlain's reply shows that he has given the most serious consideration to the questions involved, and that he is fully impressed with the dangers of allowing opticians untrained in medical matters to deal with defects of vision. It will be remembered that the Council of British Ophthalmologists issued a report on sight-testing by opticians (*Brit. Jl. of Ophthal.*, Vol. VI, p. 554, 1922); and it is gratifying to note that the arguments and general tenor of the Minister's reply are in concord with the views expressed in that report.

"Optic Neuritis" and Cerebral Tumour

At a recent meeting of the Royal Medico-Chirurgical Society of Glasgow there was a discussion on this subject which was instituted, apparently, by Mr. Archibald Young, Professor of Surgery at the University, with a view of obtaining information which would be of value in surgical work. He asked the ophthalmologists a number of questions such as "What the ophthalmologist really means by optic neuritis?" and "What are the features by means of which he recognizes one type of optic neuritis from another, if, indeed, he does so?" and so on. To most of the questions asked we are afraid that the answers given by the ophthalmologists—in this instance Drs. H. W. Thomson and A. J. Ballantyne—can be fairly well summed up in the well-known Parliamentary reply: "the answer is in the negative." The discussion of the subject was very interesting and revealed a large amount of work and thought on the part of the speakers; it will well repay perusal in the *Glasgow Medical Journal* of January, 1926. But we fear that the surgeon will not find much help in the conclusion that "in so far as one can be satisfied that oedematous swelling of the optic disc predominates over the retinal changes, one is justified in suspecting intracranial increase of pressure as the cause rather than a toxaemia or vascular sclerosis. In no case is it possible to assess the ocular condition until examination of the patient has revealed the presence or absence of the possible causes to which reference has already been made." Yet we do not think the ophthalmologist is at the present time in a position to make the statement any firmer than this pronouncement by Dr. H. W. Thomson.

The following excerpt from Dr. Ballantyne's remarks is worthy of reproduction. It is as follows: "these two problems—that of the relief of the papilloedema and other pressure symptoms, and that of the removal of the neoplasm—are sometimes allowed to be confused with each other. They are two entirely different matters, and, as an oculist, I would like to make a plea for greater concentration on the simpler problem of decompression for the preservation of sight. No doubt it is a higher aim to attempt the

localization and removal of the tumour, but there must be some limit to the time allowed for clinical observation, and experience shows that the number of cases in which the growth is not only localizable but operable is very small. The real benefits of decompression are available for a much larger proportion of the cases, and if this procedure is delayed in the hope of receiving greater benefit, disappointment will be the rule rather than the exception, and the moment favourable for decompression will pass." With these words we think a large proportion of our readers will agree. Further, they constitute at least some sort of reply to the questions asked by the surgeon.

Ophthalmic Benefit

From some questions which were recently asked in the House of Commons, a brief report of which appeared in the *British Medical Journal* of March 6, 1926, it appears that some panel practitioners refer a much higher proportion of their cases for ophthalmic treatment than do others. Any ophthalmic surgeon to a general hospital serving a London district could have told the authorities that this would be the case. The questioner seemed to think that more uniformity could be obtained by orders from headquarters; so it could, but it would be most unjust to attempt anything of the sort. It would be manifestly unfair to limit the number of cases on a panel that the practitioner could refer for ophthalmic benefit. Suppose for a moment that a panel of 1,000 were allowed only 5 per cent. of the whole to be sent for ophthalmic treatment in any one year, and that the fifty-first applicant was suffering from some serious eye disease; the latter would, it seems to us, have a good case in law against the limiting body, if he or she had to wait a year or even a week for advice and treatment. *Flagitio additis damnum.*

One way in which to obtain more uniformity would be to require the ophthalmic surgeon when giving his prescription, or when submitting his account to the approved societies, to furnish a certificate that of the cases seen so many were legitimate cases to have been sent for ophthalmic benefit, and so many were not; but this would lead to endless trouble, as some people take a much broader outlook than others. The enthusiast who considers that every headache is ocular in origin and who sees in the correction of a small amount of astigmatism a cure for conditions ranging from dyspepsia to miners' nystagmus is perfectly at liberty to have his own opinions and to send every patient on his panel for ophthalmic benefit; while the approved societies could hardly take it upon themselves to refuse benefit, as no one could take an affidavit to the effect that the wearing of glasses might not possibly improve a patient's general health and so lead to an improvement

in the local condition for which the patient applied in the first place; but now that the ophthalmic benefit is beginning to be placed on a proper basis, it is probable that the panel doctor will make more effort to determine whether the patient's symptoms are or are not due to errors of refraction. The case of offenders in this respect will no doubt be investigated by the Ministry of Health, but we are not aware that any competent authority has been appointed by this body to investigate such cases.

There is another aspect of the ophthalmic benefit which has not yet been investigated and that is, what is to be done with the panel patients when they attend ophthalmic hospitals? Is it the duty of the hospital to refer these patients back to their panel practitioner for a recommendation to see an ophthalmic surgeon, or should they be treated at the hospital in the ordinary way?

In some instances patients bring their society's ophthalmic benefit letters to the hospital. The fees which are payable to an ophthalmic surgeon on the filling up of this letter are not payable to hospital authorities and the cases should be referred to an ophthalmic surgeon on the ophthalmic panel. Many of the letters issued by the approved societies have no place for the signature or certificate of an ophthalmic surgeon, which is evidently a mistake on their part, as otherwise they do not know to whom the fee for examination should be paid. Sufficient time has not elapsed for the working of the benefit to settle down, but information on the points referred to above and others which may arise would be of considerable service in determining how the benefit is working all over the country.

We understand that a sub-committee has been appointed by the Council of British Ophthalmologists to inquire into the subject; information from our readers would be of considerable service and should be sent to the Hon. Secretary of the Council of British Ophthalmologists, 86, Brook Street, London, W.1.

DEPUTATION FROM THE JOINT COUNCIL OF QUALIFIED OPTICIANS AND THE BRITISH OPTICAL ASSOCIATION TO THE MINISTRY OF HEALTH

The Minister of Health, the Rt. Hon. Neville Chamberlain, received on March 26 a deputation from the Joint Council of Qualified Opticians, with which was associated the British Optical Association, to discuss a Bill to secure the registration of Optical Practitioners and to regulate the practice of sight testing and optical dispensing, which had been presented to Parliament by a Private Member. The deputation was introduced by Mr. S. P. Viant, M. P.

Mr. Aves (Chairman of the Council of the Institute of Ophthalmic Opticians) said that the qualified opticians had been refused representation on the Departmental Committee on the causes and prevention of blindness; they had not been allowed to give evidence before the Committee; and representations which they had made after the Report of the Committee had been published by the Ministry of Health had not been fairly considered. Further, they had not been fully consulted before the scheme of optical treatment to be given as an additional benefit under the National Health Insurance Scheme had been drawn up. There had in the past been a conflict of views between the opticians and the doctors, but the opticians claimed that they were as fully alive to the needs of the public health as the doctors, and they had no desire but to arrive at some arrangement which would meet the legitimate objections that had been raised against the registration of opticians. The opticians only claimed competence to deal with errors of refraction and to detect functional abnormalities requiring specialist treatment by an ophthalmic surgeon, and it was a condition of the diplomas granted to opticians by their organizations that all cases of functional abnormalities should be referred to a medical practitioner. He claimed that they had therefore done all that the Minister--in speaking on Dr. Graham Little's Motion about the registration of osteopaths in the House of Commons—had advised osteopaths to do, before claiming the right to prohibit unregistered practice. They had already established a college, a hospital, and diplomas. He urged that a Committee should be appointed to decide whether the Government would not be well advised to accept the Bill promoted by the opticians.

Mr. Barker (President of the British Optical Association) said that the optical trade was united on the question. The treatment of errors of refraction was so important both to the industry and to the public that it should be under the sanction of the law and limited to those who had been educated to treat them and at the same time to detect functional abnormalities. The Royal Commission on National Health Insurance had been satisfied with the competence of the opticians to deal with errors of refraction, which, according to the evidence put forward by medical specialists, amounted to a very large percentage of the total cases of defective vision. Legislation similar to that which was proposed was already in force throughout practically the whole of the British Empire and the United States of America.. He claimed that the Bill would be of value to the community and a protection against charlatans, and would put an end to the conflict of views that had arisen between the opticians and the doctors.

Mr. Houghton (Chairman of the Joint Council of Qualified Opticians) said that for three years opticians had been treating

insured persons to the perfect satisfaction of approved societies and to the insured population. There was little or no evidence of any serious consequences to any single patient through having been treated by an optician. Rather the case was that they could and in many cases did recognize disease, and in accordance with the condition of their diplomas referred the patients to qualified ophthalmic surgeons. The public resented the waste of time involved in having always to consult doctors before receiving ophthalmic benefit.

The Minister said that the Bill as drafted would debar doctors from treating defects of vision. This was perhaps not an insuperable difficulty, but he doubted whether any amendment which would remove it would leave the Bill in a form acceptable to the opticians. But the whole difficulty was that defect of vision might be due to simple errors of construction in the eye itself which can be corrected mechanically by glasses; to disease in the eye needing treatment apart from the provision of glasses, or disease not localized in the eye but due to a pathological condition in the body. If a case was not rightly classified serious injury to the patient might ensue. Even if such a risk were confined to a very small percentage of patients he would not be justified in submitting them to it, as he was advised that it was in fact very serious indeed. He was also not satisfied that the Optical Board proposed in the Schedule to their Bill was one which would secure the qualification only of persons competent to recognize disease, and he pointed out that 18 of the 25 members of the proposed Board were to be opticians.

It was not possible to argue from conditions in one country to those in another. Conditions in the Dominions were entirely different. There were vast territories with relatively small and widely-scattered populations who could not all be served by doctors. Nor could he accept their argument that his advice to the osteopaths supported their claim. After advising the osteopaths to set up a college and institute a diploma he had gone on to speak of the way in the United States of America the osteopaths had assimilated their curriculum to that of the medical schools. He did not see how the opticians could similarly assimilate their curriculum.

He admitted, however, they had a case up to a certain point. He had some sympathy with their claim that persons who had properly qualified themselves to treat errors of refraction not requiring medical attention should have a special label, and he would like to meet this point. The difficulty out of which he could not see his way was how patients suffering from simple errors of refraction could be distinguished from those in whom defect of vision was due to some pathological condition.

ABSTRACTS

I.—DEVELOPMENT

(1) **Versari, R.—The morphogenesis of the blood vessels of the pupillary membrane and the region of the ciliary processes in the eye of *sus scropha*. (La morfogenesi dei vasi sanguiferi della membrana pupillare e della zona dei processi ciliari nell'occhio di *sus scropha*.)** *Memorie della R. Accademia Nazionale dei Lincei*, 5th series, Vol. XIV, Fasc. XIV, 1923.

(1) This is a short paper dealing with the circulatory conditions in the anterior segment of the eye of the developing pig. It follows on **Versari's** extensive monograph on the development of the vessels of the human iris and ciliary body which has been reviewed in this journal (Vol. IX, p. 124, 1925). The present investigation was undertaken with the object of procuring further collateral (comparative) evidence in favour of Versari's views of the circulatory conditions in the human foetal eye. As far as this goes he has been eminently successful, as his findings in the pig resemble very closely, as might have been expected, stages of human development. As in all the work of this distinguished Italian anatomist the technique is extremely beautiful and delicate and the paper, which contains an excellent coloured plate, is very clear and comprehensive.

The main point at issue is the part played by the annular vessel. Versari has for some time past been pointing out that the view of Fuchs, Seefelder, and Speciale-Cirincione that this vessel is an artery is erroneous, since it is developed from the anterior loops of the primitive choroidal net and receives blood from the pupillary membrane which is supplied by the long ciliary arteries. This appears to be the case also in the pig. There are a few trifling differences between the conditions found in a pig embryo of 37 mm., and a human embryo of a corresponding stage. In the pig, for instance, the two long ciliary arteries, although they branch at the margin of the optic cup, do not anastomose, with the result that two arterial segments of a circle are formed and not a complete circle as in man. Another rather interesting difference is seen in the arrangement of the vessels of the pupillary membrane. Whereas in man these vessels form loops which pass towards the anterior pole of the lens but seldom cross it, in the pig there is a vascular net of irregular mesh covering the whole of the front of the lens. This difference may have some phylogenetic interest as suggesting a modification in man in the direction of increased transparency of media and increased visual acuity.

IDA C. MANN.

II.—DISEASE OF LENS

(1) **Elschnig, A. (Prague).—Extraction of senile cataract in the capsule.** *Amer. Jl. of Ophthal.*, May, 1925.

(1) Elschnig's paper is based on an experience of more than five thousand cases of cataract which have been operated upon by him, or under his direction. The following are some of his conclusions: Corneal wounds are in danger of remaining patent unduly long, and there is furthermore the possibility of ingrowth of epithelium within the anterior chamber. Therefore all incisions for the purpose of opening the anterior chamber must be in the limbus or at least in the portion of the corneal margin which contains the superficial vessels; moreover, they should be covered by a conjunctival flap. Concerning intracapsular methods Elschnig has used those described by Pagenstecher, Smith, Stanculeanu-Török and Barraquer. He prefers intracapsular extraction in (1) immature cataract, particularly when complicated by high myopia, previous inflammatory disease or diabetes, since in these cases even small remnants of cortex may excite severe uveitis and even sympathetic ophthalmitis, which complications are absent if the lens be extracted in its capsule; (2) in hypermature cataracts, since the albumen remaining after a capsulotomy seems to be intensely irritating to the uvea; (3) in the eyes of relatively younger individuals when there is a nuclear sclerosis, resulting from retinitis pigmentosa, choroiditis and quiet irido-cyclitis. In such eyes the vitreous membrane and the capsule are relatively thick so that the operation is comparatively easy, whereas if the lens is not removed in its entirety, iritis, secondary glaucoma, etc., frequently result. For a simple senile cataract the usual extraction with capsulotomy is to be preferred. The indications as to the type of operations are: (1) if iridectomy has already been performed the Stanculeanu-Török operation is about as satisfactory as the Barraquer; (2) in immature cataracts, or where the extraction is done with a round pupil, the Barraquer is the operation of choice because the capsule is less often burst, there is less vitreous prolapse, less damage to the iris, and less danger of subsequent iris prolapse.

With regard to technique, the Török modification consists in grasping the anterior capsule with a smooth forceps, and luxating the lens which is then delivered inverted (inferior edge first) by pressure on the lower corneal margin with a Daviel spoon or strabismus hook. The author's modifications in Barraquer's technique are relatively few; he prefers to operate with a head lamp in front of the patient, carries out Barraquer's semicircular

incision, endeavouring always to include a small scleral flap, contents himself with one suture, placed early in the operation, and performs his iris root incision in place of a peripheral iridectomy.

F. A. WILLIAMSON-NOBLE.

(2) **Camison, A.—Slit-lamp examination of a cataract caused by lightning. (Observaciones con la lampada de Gullstrand y microscopio corneal en un caso de catarata por el rayo.)** *Arch. de Oftal.*, Vol. XXV, pp. 529-538, October, 1925.

(2) **Camison** describes the slit-lamp appearances of a case of cataract due to a lightning flash, which came under observation soon after the accident. The patient, a lad, aged 15 years, sought advice some hours after exposure on account of failure of vision in the right eye; the left was unaffected. On examination two days later, the structures in the anterior part of the eye appeared normal, but ophthalmoscopic examination revealed a number of almost spherical transparent bodies in the lens, crowded more closely towards the central area than in the periphery, which tended to form a circle whose diameter corresponded to the pupillary aperture in moderate dilatation. The slit-lamp revealed these as small vesicles and vacuoles arranged superficially under the anterior capsule, much smaller than those usually observed in the subcapsular region in senile cataract, and in the superficial ring round the pupillary margin they were closely crowded and tended to coalesce. There was no appearance of any opacity in the rest of the lens, which appeared perfectly normal, no pigment on the anterior capsule, no evidence of iritis, the vitreous was clear, and the fundus normal. In six weeks the visual acuity had improved from 1/6 to 2/3; the upper half of the lens was perfectly transparent, but the vacuoles in the lower segment remained and had begun to show fine opacity formation round their periphery. Six months later the entire anterior cortex showed a fine greyish-white opacity, while at the posterior pole of the lens, which before had appeared clear, a similar clouding had appeared.

The following cases of electric cataract are quoted as having been described under the slit-lamp:

1. **Koeppe, L.**—Ueber Spaltlampenbeobachtungen bei Cataracta electrica. *Klin. Monatsbl. f. Augenheilk.*, Bd. LXVI, s. 387, 1921.
2. **Freese.**—Ueber das Spaltlampenbild der Cataracta electrica. *Arch. f. Augenheilk.*, Bd. XCI, s. 278, 1922.
3. **Gjessing**—A case of Cataracta electrica. *Brit. Jl. of Ophthal.*, p. 447, 1922.

W. S. DUKE-ELDER.

(3) **Wheeler, John, M.D. (New York).—Secondary cataract opening by single straight incision. Iridotomy by the same method.** *Amer. Jl. of Ophthal.*, March, 1925.

(3) **Wheeler** uses an instrument rather resembling a ground down Graefe knife. The actual measurements are: length of blade 18 mm., maximum width 1 mm. The surgeon stands at the head of the table and a little to the left of the eye to be operated on. The speculum is introduced and the eye held by fixation forceps applied to the conjunctiva immediately opposite the point where the knife is to enter the cornea. The handle of the knife is taken most delicately between the pulps of the forefinger and thumb of the right hand, two inches from the knife point which is passed through the upper part of the cornea 1 mm. from the limbus, the cutting edge of the knife being towards the operator. The point is then carried across the aqueous chamber, behind the inferior portion of the iris and carefully brought in contact with the membrane. The part of the knife handle between the finger and thumb is now carried forwards in a straight line, allowing it to alter in position as though it were working freely on a pin passing straight through the knife handle and set in the pulps of the forefinger and thumb. By this manoeuvre the knife slides first in and then out, as its point traverses the membrane and a straight clean incision is the result. The knife being lightly held with its cutting edge towards the operator, the wound of entry through the cornea is not enlarged, though the account of the operation does not state whether the anterior chamber is preserved. The following claims are made for the operation: it effects a permanent opening in the visual line, the trauma is of the slightest degree, and bands, however thick, are easily divided. The method may also be used for the performance of iridotomy.

F. A. WILLIAMSON-NOBLE.

III.—INJURIES

(1) **Scott-Moncrieff, W. E. (Victoria, B.C., Canada.—A case of traumatic Aniridia.** *Amer. Jl. of Ophthal.*, July, 1924.

(1) The case reported by **Scott-Moncrieff** occurred in a male, aged 66 years, who struck his eye against a chair. The iris and part of the ciliary body were lying on the sclera on the nasal side of the cornea and there was a hyphaema. A fortnight later the eye was quiet, the iris lying under the conjunctiva, the lens absent,

having probably been dislocated to a position under the conjunctiva just below the horizontal meridian on the nasal side of the cornea. The author was at first inclined to give a very bad prognosis but after reading the article by D. J. Wood of Cape Town in the BRITISH JOURNAL OF OPHTHALMOLOGY (Vol. IV, page 412, 1920) he became more hopeful. His optimism was justified and within two months the patient could read 5/5 with the right eye, wearing a correction of +11D.sph. A month later the vision was 5/4 partly, with the same correction. He concludes his article by endorsing Wood's suggestion that "it would appear that in some cases of obstinate chronic iritis the total removal of the thickened iris is not merely easy, but is very effective as a cure."

F. A. WILLIAMSON-NOBLE.

(2) **Landolt, Marc (Paris).—Indirect rupture of the choroid. (Rupture indirecte de la choroïde.)** *Arch. d'Ophtal.*, September, 1924.

(2) **Landolt** publishes notes of this case, an ordinary example of rupture of the choroid, to illustrate one feature. He also discusses the method of causation of such ruptures, and reports the results of experiments he has made and the views based thereon. This part of his paper would be unintelligible without the diagrams, and those interested should consult the original. Landolt's patient, a lad, aged 16 years, was struck on the eye by a hockey stick causing iridodonesis and subluxation of the lens. Below and not far from the disc was a large rupture of the choroid, of the usual crescent shape. A month later the scotomatous area was accurately mapped with Pigeon's stereoscope. This revealed a fairly large roughly crescentic scotoma continuous at its lower border with the blind spot (shown in diagrams). Two years and a half later the scotoma had become slightly smaller but was still continuous with the blind spot. Vision was 0.6 and there was 1D. of myopia.

The retina and its blood-vessels between the rupture and the papilla appeared quite normal on ophthalmoscopic examination, yet the retina over that area was functionless. Beyond the limits of the rupture, towards the periphery, the function of the retina was undisturbed. Obviously its centripetal conductive power was uninjured, while its percipient elements were put out of action over the area corresponding to the choroidal lesion. Landolt states that this is the only case, of which he is cognizant, in which the scotoma has been measured with the precision afforded by the binocular method.

J. B. LAWFORD.

(3) **Roy (Montreal).—Bilateral lagophthalmos after an accidental loss of the skin of the forehead and of the hairy scalp, blepharoplasty. (Lagophtalmie bilatérale consécutive a la perte accidentelle de la peau du front, et du cuir chevelu, blépharoplastie.)** *Ann. d'Ocul.*, Vol. CLX., January, 1923.

(3) In this article, already communicated to the 1922 Washington Congress, **Roy** gives an account of the case of a woman, aged 37 years, who, twenty-five years before, had been accidentally scalped in a laundry and who now presented very considerable lagophthalmos with the outer ends of the palpebral fissures much elevated by traction, but without any actual ectropion. He made curvilinear incisions beyond, and mostly above the level of, the outer canthi, and by wide undercutting he lowered the outer canthi to the horizontal level, and to keep them there put in anchor stitches of catgut through the periosteum of the malar regions. Roy thinks that this downward traction on the canthi was very appreciably helped by putting on the dressings with pressure from above downwards. He then used an autoplastic graft from the cheek to cover each bared area. He was anxious to graft on eyebrows but she would not wait. The three photographs reproduced show how excellent an improvement was obtained.

W. C. SOUTER.

(4) **Thoral, R.—Optic atrophies due to fissures radiating to the optic canal. (Atrophies optiques par fissures irradiées au canal optique.)** *La Clin. Ophtal.*, April, 1924. (Thèse de Paris, 1924.)

(4) **Thoral's** useful thesis deals in the main with those cases in which a trauma of the orbital margin or of the antero-lateral region of the head, even when slight, gives rise to none of the usual symptoms of fracture of the base of the skull and is yet followed by more or less severe lesions of the optic nerves. He concludes from his investigations that (1) a shock, even when apparently slight, on the frontal eminence or even more frequently at the external orbital apophysis of the frontal bone, may cause a fissure of the orbital roof which radiates to the optic canal; (2) these fractures may be accompanied by none of the classical signs of fracture of the base; (3) since the sheath of the optic nerve is the periosteum of the canal the nerve is often injured, being either torn or compressed; (4) total loss of vision results, most often unilateral, though sometimes bilateral; (5) the loss of vision may be immediate and due to haematoma or to section of the nerve, or progressive and due to the formation of callus; (6) lastly the result may be a definite but partial amaurosis, either

from the first, or because the original total amaurosis retrogresses, or even because the atrophy progresses and then stops short of being complete.

From these facts we must always bear in mind that in slight injuries of the frontal bone the vision may be gravely affected.

ERNEST THOMSON.

BOOK NOTICE

Diseases of the Eye: A Manual for Practitioners. By Lt.-Col. HENRY KIRKPATRICK, M.B., I.M.S., late Professor of Ophthalmology, Madras. Pp. 132, with 28 illustrations. Calcutta: Butterworth & Co. 1925. Price, 10s. 6d.

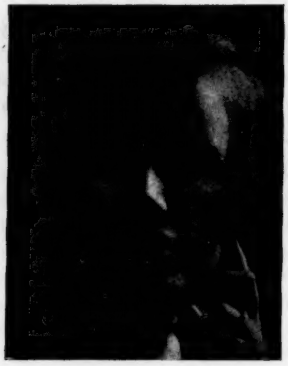
The needs of the general practitioner abroad as regards ophthalmology differ considerably from the requirements of those in this country, inasmuch as the former is often called upon to perform operations that would here be left to the specialist. From this point of view the very large amount of space devoted to operative technique, somewhat to the neglect of anatomy, physiology, and pathology, may be considered of use. This account is lucid and straightforward and as helpful as any written account of technique can ever be. Colonel Kirkpatrick disarms criticism in his preface by expressing the hope that his very condensed account may serve as an introduction to some of the larger works on the subject, also pointing out that in such a brief account dogmatic statements are unavoidable. We think that the condensation has gone rather too far in the account of retinoscopy, in which no mention is made of the use of any mydriatic, although it is stated that it is essential that the patient should look directly at the light. The slip of *errata* by no means exhausts the misprints, while faulty alignment and badly marked letters occur with an irritating frequency. Seeing that there are no coloured plates, and that the advertisement of a surgical instrument maker forms the frontispiece, we think it should have been possible to produce the book at a lower price. As far as it goes it may be recommended as quite a reliable guide to the beginner.

CORRESPONDENCE

PTOSIS OPERATION

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—In the June, 1924, number of this journal I published the early results of an operation I suggested for ptosis. The result, at present more perfect than during the first months following the



operation, may, I assume, be now called permanent, and I give here, with the patient's hearty and grateful consent, her photograph sixteen months after the operation.

I have performed this operation repeatedly since, on single and double congenital cases, I have also had one excellent result in a paralytic case, from the cosmetic point of view. The functional result was also good, as far as the ocular movements were concerned, but was followed by diplopia. This was dealt with by very careful prism correction, and gives no trouble at all, as I have recently heard.

I have slightly modified the operation by the simple but very useful expedient of not tying the sutures on the conjunctival surface, as they are very difficult to remove from there. But after fastening the tarsus to the muscle by the three double-threaded sutures I pass both ends of each suture through the whole thickness of the eyelid, on to its skin surface a couple of mm. apart, and tie them over three small glass beads. If carefully placed the small scars fall into the newly created tarsal fold.

The photograph shows the balance in repose to be perfect. It was the right eye, which was operated on. The same balance is present in all the ocular movements as well.

Yours sincerely,

G. YOUNG.

SCLERAL STITCH IN ADVANCEMENT OPERATIONS

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Referring to the note by Mr. Arthur Greene in the BRITISH JOURNAL OF OPHTHALMOLOGY for March. About twenty years ago I tried the method which Mr. Greene advocates of making a hole with a discission needle and putting the ordinary curved eye needle, threaded, through the same hole. I gave it up for several reasons. Unless the hole is made unnecessarily large it is not always easy to find it and to get the curved needle through it, and the discission needle fixed in a straight handle is not so convenient for small or deeply-set eyes and does not admit of such delicate manipulation as the small straight lance-headed cutting needle which I now use, held at right angles in a straight needle holder.

I am yours faithfully,

CL. WORTH

LONDON.
March 16, 1926.

THE ACCOMMODATION PROBLEM

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—In the BRITISH JOURNAL OF OPHTHALMOLOGY of October 1925, there appeared an interesting article by Dr. Hartridge on the accommodation problem. The article would have been more convincing but for a reference to the lens of the cat. The statement is made that when the lens of the cat was examined after death it was found to be in a state of accommodation.

As far back as 1886 Mr. W. Lang and I from a fairly exhaustive examination of the eyes of mammals, came to the conclusion that,

if the majority of them had any accommodation, it was rudimentary. The observation particularly applied to the cat. Subsequent experimental investigation in Australia of a number of animals showed that with the exception of monkeys which have a fair range of accommodation, the mammals examined showed no practical evidence of the existence of accommodation within the limits of error in the methods used.

Dr. Hartridge refers to some work done with Dr. Yamada, the account of which was published in 1922 (*Brit. Jl. of Ophthal.*, Vol. VI, p. 481). They estimated the range of accommodation of the cat by variation of the method employed by me in 1897. They performed an iridectomy on the cat and then estimated the refraction under atropin and under eserin and obtained a maximum of 3.5D.

In my own experimental work I always performed double and opposite iridectomies so as to eliminate completely the effect of the iris. The method was supplemented by testing the voluntary accommodation of the animal by suitable devices and by electrical stimulation of the sclero-corneal junction. The references are set out in the *Ophthalmic Review* of 1898, page 255. In that reference will be found allusions to the work of Theodore Beer, who found in a number of mammals, other than monkeys, a range of accommodation of from 1D. to 3D. It is pointed out there that it is difficult to be sure of a change of less than 2D., owing to experimental difficulties. Beer had previously shown that the eyes of reptiles possess an excellent accommodation apparatus and that their range of accommodation is often great. I confirmed this in the case of the Australian blue-tongued lizard, which had in the case examined a range of accommodation superior to man. Most observers who have approached the matter from the experimental point of view seem agreed that the animals named in the published accounts possess either no accommodation at all or a very small amount. Indeed, Mr. Lang and I drew attention in 1886 to the fact that in view of the degree of hypermetropia many of these animals exhibit accommodation could be of very little use to them even if they possessed it. In the course of that investigation we found no trace of accommodation except in the case of monkeys. Is it possible that in the course of evolution, possibly from reptiles to man, the accommodation became vestigial and did not revive until the anthropoid stage was reached?

Yours sincerely,

JAMES BARRETT.

MELBOURNE.

NOTES

Deaths

WE regret to announce the death from phthisis of Dr. McM. DICKSON, L.R.C.P., M.R.C.S. Dickson was a student of St. Thomas's Hospital, who qualified in 1915. During the war he served as a captain in the R.A.M.C., and won the Military Cross. He served for a period on an expedition to the White Sea, and the rigours there cheerfully endured probably undermined a constitution predisposed to tubercle. After the conclusion of the war Dickson occupied the posts of Junior and Senior Ophthalmic House Surgeon at St. Thomas's Hospital. In December, 1919, he was appointed House Surgeon at Moorfields Eye Hospital, but in June, 1920, was compelled to resign by the development of pulmonary tuberculosis. By his death a man whose personal charm and professional promise were recognized by all with whom he came in contact has been removed—a memory full of fragrance is left behind.

We regret to record the death, at the age of seventy-one, of PROFESSOR FRIEDRICH DIMMER, the Chief of the second Eye Clinic in Vienna. He succeeded Fuchs in the Directorship of the Second Eye Clinic some ten years ago, having previously been the Professor in Graz. Dimmer will be remembered by most for his work in photography of the fundus oculi, and the somewhat elaborate apparatus which he constructed for this purpose is known to a good many. His great work is that which appeared in 1923, on the ophthalmoscope and ophthalmoscopic diagnosis, while a great ophthalmoscopic atlas, the publication of which he had in view, is only partially completed.

* * * *

Appointments

MISS IDA C. MANN has been appointed Assistant Surgeon to the Central London Ophthalmic Hospital.

Dr. S. SPENCE MEIGHAN has been appointed to the Chair of Ophthalmic Surgery and Medicine in the Anderson College, Glasgow, and Honorary Surgeon to the Glasgow Eye Infirmary.

* * * *

Annual Returns for St. Margaret's Hospital for Ophthalmia Neonatorum

THE annual returns for St. Margaret's Hospital are given below. The figures show a diminution in the number of cases notified, and therefore a decrease in the number admitted. All ophthalmic surgeons know the danger of applying too strong an antiseptic to the conjunctival sac of the newly born. The fact that every year there are admitted to St. Margaret's a number of children whose corneae have been badly damaged by the use of too strong a solution of

silver nitrate or of perchloride of mercury is regrettable. Steps should be taken to bring to the notice of all midwives and medical men attending labour cases the limit of safety with regard to these drugs.

No. of Children admitted.		No. of Mothers admitted.		No. of Children discharged with both eyes blind.		No. of Children discharged with single eye blind.		No. of Children discharged with both eyes impaired.		No. of Children discharged with single eye impaired.	
1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925
179	186	120	116	1	—	1	—	9	7	16	10

The figures for London are as follows:

Year.	No. Notified.	No. in St. Margaret s Hospital.
1924	704	199
1925	700	186

* * * *

French Ophthalmological Society

May 10, 8.30 o'c.— First Session: Communications relating to refraction, lacrymal passages, lids, and conjunctiva. 14 o'c.—Report by Professor Gallemaerts: the examination of affections of the cornea by means of the slit-lamp. 16 o'c.— Departure for Port-Royal.

May 11, 8.30 o'c.—Session devoted to the consideration of affections of the cornea, iris, crystalline lens, choroid, and retina. 14 o'c.—Visits to the Hospitals.

May 12, 8.30 o'c.—Session for communications relating to the optic nerve, orbit, visual centres and therapeutics. 14 o'c.—Visits to the Hospitals.

The Meetings of the Society will be held at the Faculty of Medicine in Paris.

FUTURE ARRANGEMENTS

1926

May 10—12.—Thirty-ninth Congress of the French Ophthalmological Society.

May 14.—Royal Society of Medicine, Section of Ophthalmology.

June 11.—Royal Society of Medicine, Section of Ophthalmology (Annual).

July 14—17.—Oxford Ophthalmological Congress.

July 21—23.—British Medical Association at Nottingham.